

**NAVY TACTICS, TECHNIQUES, AND PROCEDURES**

**NAVY SEARCH AND  
RESCUE (SAR) MANUAL  
NTTP 3-50.1**

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**DEPARTMENT OF THE NAVY  
OFFICE OF THE CHIEF OF NAVAL OPERATIONS**

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April 2009

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# PREFACE

NTTP 3-50.1, NAVY SEARCH AND RESCUE (SAR) MANUAL provides guidance to units assigned SAR responsibilities. It is intended to promote and maintain standardization of SAR procedures, equipment, and techniques within the U.S. naval forces. It is essential that NTTP 3-50.1 be readily available to unit personnel who may engage in SAR operations. NTTP 3-50.1 is supplemental to the International Aeronautical and Maritime Search and Rescue Manual, which provides guidance for U.S. forces, military or civil, participating in combined SAR operations.

## DEVIATION FROM AUTHORIZED PROCEDURES

1. This manual contains information for the safe and effective application of search and rescue (SAR) procedures, and the execution of SAR operations. However, it is not a substitute for sound judgment. A dynamic SAR environment may require on-scene deviations or modifications from the procedures prescribed herein to successfully accomplish a SAR mission.
2. The existing risk of deviation must continually be weighed against the benefit of deviating from this manual. Some examples of areas in which deviations are most strongly advised against are as follows:
  - a. The proper application and use of rescue equipment restraint straps, safety straps, and safety devices as mandated by this manual.
  - b. A SAR unit assigned to alert SAR responsibilities without the minimum required rescue equipment (Chapter 5), or the deployment of rescue personnel without minimum required rescue equipment (Chapter 5).
3. If a rescue crew member does not properly utilize/apply any of the above-mentioned safety devices, or deviates from authorized procedures, he/she shall communicate his/her intentions to the rest of the SAR unit crew prior to deviation. This will help utilize the full potential and experience of the entire crew to make a decision to deviate from authorized procedures.
4. In all cases, all associated risks should be weighed prior to a decision to deviate from or modify a procedure as set forth in this manual.

## SEARCH AND RESCUE ORGANIZATION

### National SAR Plan

The National SAR Plan is an interagency agreement that establishes a cooperative network of U.S. SAR facilities to be coordinated in any one area by a single federal agency. In support of the National SAR Plan, DOD components provide SAR forces and assistance on a basis of noninterference with primary military missions. The National SAR Plan also designates the regional SAR coordinators for the Inland Region, the Maritime Region, and the Overseas Region. The regions are further divided into subregions, sectors, and subsectors. The geographical areas and the respective SAR coordinator for each may be found in the National SAR Plan and the United States National Search and Rescue Supplement to the International Aeronautical and Maritime Search and Rescue Manual.

## **NTTP 3-50.1**

### **JP 0-2, Unified Action Armed Forces (Chapter 4, Section 3)**

JP 0-2 provides the basic principles governing service participation in a Joint Rescue Coordination Center (JRCC), the conduct of joint SAR missions, and responsibilities and authority of CINCs. It also states that:

1. Each service is responsible for providing forces for SAR in support of its own operations, taking into account availability and capability of SAR forces of other services including the Coast Guard.
2. The principles and doctrines set forth within JP 0-2 may be used as a guide for, but not necessarily govern, the following:
  - a. Local base SAR operations (responsibility of the base commander)
  - b. SAR operations in support of a naval task force (responsibility of the task force commander)
  - c. SAR operations in support of tactical operations in battle area (responsibility of the tactical commander).

### **NAVAL SAR OPERATIONS**

Naval SAR units may become involved in SAR efforts in four different situations:

1. As a vessel or aircraft in distress
2. As a unit responding independently to persons or property in distress
3. As part of an organized SAR force under the direction of the regional SAR coordinator
4. As a unit of a naval task force, unit, or element under the direction of the officer in tactical command (OTC).

Emergency procedures and signaling information may be found in applicable fleet and force operation plans, communications publications, flight information publications (FLIPs), and NATOPS manuals.

Search planning and operations procedures should be conducted as directed by the SAR mission coordinator (SMC) or on-scene commander (OSC) and in accordance with the International Aeronautical and Maritime Search and Rescue Manual.

This manual provides personnel recovery procedures and techniques to be used by naval units on or over land and sea, and in peacetime submarine disaster SAR operations. It also contains information on required equipment, training, and precautions.

The rescue environment may require deviation from procedures contained herein. Deviation from specified rescue procedures is authorized in emergency situations when safety justifies such a deviation.

### **REFERENCES**

Throughout this publication, references to other publications imply the effective edition.

## ORDERING DATA

Order printed copies of a publication using the Print on Demand (POD) system. A command may requisition a publication using standard military standard requisitioning and issue procedure (MILSTRIP) procedures or the Naval Supply Systems Command website called the Naval Logistics Library (<https://nll1.ahf.nmci.navy.mil>). An approved requisition is forwarded to the specific DAPS site at which the publication's electronic file is officially stored. Currently, two copies are printed at no cost to the requester.

## CHANGE RECOMMENDATIONS

Procedures for recommending changes are provided below.

### WEB-BASED CHANGE RECOMMENDATIONS

Recommended changes to this publication may be submitted to the Navy Doctrine Library System, accessible through the Navy Warfare Development Command website at: <http://ndls.nwdc.navy.smil.mil> or <https://ndls.nwdc.navy.mil>.

### URGENT CHANGE RECOMMENDATIONS

When items for changes are considered urgent, send this information by message to the Primary Review Authority, info NWDC. Clearly identify and justify both the proposed change and its urgency. Information addressees should comment as appropriate. See accompanying sample for urgent change recommendation format on page 25.

### ROUTINE CHANGE RECOMMENDATIONS

Submit routine recommended changes to this publication at any time by using the accompanying routine change recommendation letter format on page 26 and mailing it to the address below, or posting the recommendation on the NWDC Doctrine Discussion Group site.

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## CHANGE BARS

Revised text is indicated by a black vertical line in the outside margin of the page, like the one printed next to this paragraph. The change bar indicates added or restated information. A change bar in the margin adjacent to the chapter number and title indicates a new or completely revised chapter.

## NTTP 3-50.1

### WARNINGS, CAUTIONS, AND NOTES

The following definitions apply to warnings, cautions, and notes used in this manual:



#### **WARNING**

An operating procedure, practice, or condition that may result in injury or death if not carefully observed or followed.



#### **CAUTION**

An operating procedure, practice, or condition that may result in damage to equipment if not carefully observed or followed.

#### **Note**

An operating procedure, practice, or condition that requires emphasis.

### WORDING

Word usage and intended meaning throughout this publication is as follows:

“Shall” indicates the application of a procedure is mandatory.

“Should” indicates the application of a procedure is recommended.

“May” and “need not” indicate the application of a procedure is optional.

“Will” indicates future time. It never indicates any degree of requirement for application of a procedure.

FM ORIGINATOR

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FROM: (Name, Grade or Title, Activity, Location)  
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SUBJECT: ROUTINE CHANGE RECOMMENDATION TO (Publication Short Title, Revision/Edition, Change Number, Publication Long Title)

ENCL: (List Attached Tables, Figures, etc.)

1. The following changes are recommended for NTTP X-XX, Rev. X, Change X:

a. CHANGE: (Page 1-1, Paragraph 1.1.1, Line 1)

Replace "...the ~~National Command Authority~~ President and Secretary of Defense establishes procedures for the..."

REASON: SECNAVINST #####, dated #####, instructing the term "National Command Authority" be replaced with "President and Secretary of Defense."

b. ADD: (Page 2-1, Paragraph 2.2, Line 4)

Add sentence at end of paragraph "See Figure 2-1."

REASON: Sentence will refer reader to enclosed illustration.

Add Figure 2-1 (see enclosure) where appropriate.

REASON: Enclosed figure helps clarify text in Paragraph 2.2.

c. DELETE: (Page 4-2, Paragraph 4.2.2, Line 3)

Remove "Navy Tactical Support Activity."

"...~~Navy Tactical Support Activity~~, and the Navy Warfare Development Command are is responsible for..."

REASON: Activity has been deactivated.

2. Point of contact for this action is (Name, Grade or Title, Telephone, E-mail Address).

(SIGNATURE)  
NAME

Copy to:  
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COMUSPACFLT  
COMNAVWARDEVCOM

# CHAPTER 1

## Aviation Maritime Search and Rescue Procedures

### 1.1 MARITIME ENVIRONMENT

By the very nature of the naval mission, the search and rescue (SAR) procedures most frequently used by the Navy are those employed within the maritime environment. This chapter establishes the standardized procedures for naval aviation SAR crews. Surface ship procedures are detailed in Chapter 2. Submarine procedures are contained in ATP-57.

While search procedures are well established and discussed in detail in the International Aeronautical and Maritime Search and Rescue Manual (IAMSAR) (JCS 3-50), rescue procedures are less well defined and require tailoring to the particular situation. The condition of the survivor(s), the presence of a parachute, floating debris, fire, sea state, etc., all affect the rescue procedures. This section discusses the basic procedures that are to be used for rescue.

### 1.2 SEARCH

#### 1.2.1 Search Planning

Factors involved in search planning are covered in detail in the IAMSAR, volumes I and II, as modified by the United States National Search and Rescue Supplement (NSRS). The extent of required planning will depend on the circumstances. For instance, the planning required for a SAR launch off an aircraft carrier (CV) in daylight, when the survivor is in sight from the flight deck, is much different from that for a launch off the same CV at night to a survivor 35 miles at sea. (Paragraph 1.9 discusses conditions of readiness.) Search planning must begin well in advance of any search and rescue situation. The assets available and their capabilities must be known beforehand. Particularly, information such as navigation, communication, and time-on-station capabilities must be readily available.

#### 1.2.2 Search and Rescue Organization

##### 1.2.2.1 SAR Coordinator

The rescue coordination centers (RCCs), which are established worldwide by geographic location, handle the function of the SAR coordinator and, if not directly involved in the search operation, shall be informed and kept abreast of the progress of the search.

##### 1.2.2.2 SAR Mission Coordinator

While the SAR coordinator generally designates the SMC for the specific SAR mission, in the case of a military search the OTC or unit designated by the OTC shall assume the duties of SAR mission coordinator. The duties of SMC are outlined in the IAMSAR and NSRM.

### **1.2.2.3 On-Scene Commander (OSC)**

An OSC shall be designated by the SMC. In a search being coordinated by an on-scene SMC, the OSC duties may be handled by the SMC. Generally, the first search unit to arrive on scene or the unit with the best capability is designated OSC. The duties of OSC are detailed in the IAMSAR and NSRS.

### **1.2.3 Search Brief**

The units involved in a search shall receive from the SMC or OSC a complete brief of the search object including size, color, number of survivors, survival equipment, and weather conditions at the search scene. Aircraft commanders shall brief their crews in scanning procedures in accordance with (IAW) the IAMSAR and NSRS. The importance of the search brief and planning cannot be overemphasized. As much as possible, search organization and planning should be done before arrival at the scene. Time consumed for these activities after arrival can mean the difference between life and death to the survivor(s). Sweep width, search pattern selection, and track spacing should be determined as soon as possible so the search can begin immediately upon arrival at the scene.

### **1.2.4 Search Execution**

The IAMSAR and NSRM details the search patterns and the criteria for pattern selection. The SMC and OSC shall designate the search area for the individual units, shall assign search altitude, search pattern, and track spacing, and will detail communication procedures. The IAMSAR and NSRS and NWP 3-22.5-SAR-TAC discuss search planning and execution. En-route planning should be accompanied in the cockpit using NWP 3-22.5-SAR-TAC.

#### **Note**

Survivor detection probability during night/IMC can be enhanced by using forward looking infrared (FLIR)-equipped aircraft, and/or by providing aircrews/ship lookouts with night vision goggles (NVGs).

### **1.2.5 Survivor Sighting**

Upon making a sighting, the scanner shall call out the position, by the clock method (relative to the nose of the aircraft), and the distance to the survivor. Generally, the pilot at controls (PAC) should turn so the scanner making the sighting can keep the survivor/object in sight until the PAC has visual contact.

An alternate method of survivor localization that is especially effective at night or in low-visibility situations is shown in Figure 1-1. The scanner spots the survivor in the water and reports: "I have survivor in sight at \_\_\_ o'clock, \_\_ yards." A crewman immediately deploys two smoke or sea markers and reports: "Markers away." The pilot not at controls (PNAC) notes the magnetic bearing to the survivor. The PAC commences a turn away from the survivor and descends to rescue pattern altitude, a turn planned so as to pass over the markers on a magnetic heading to the survivor. If the survivor is not sighted, and it is determined that the survivor has been overflown, additional markers should be deployed and a search then commenced between the two points.

### **1.2.6 Fixed-Wing Sighting**

If a fixed-wing aircraft spots the survivor, a SAR recovery unit (SRU) (helicopter or ship) shall be notified, and the fixed-wing aircraft making the sighting shall remain overhead to provide heading/distance information to the SRU. Upon arrival of the SRU, the fixed-wing aircraft, flying overhead, may serve as a valuable communications link.

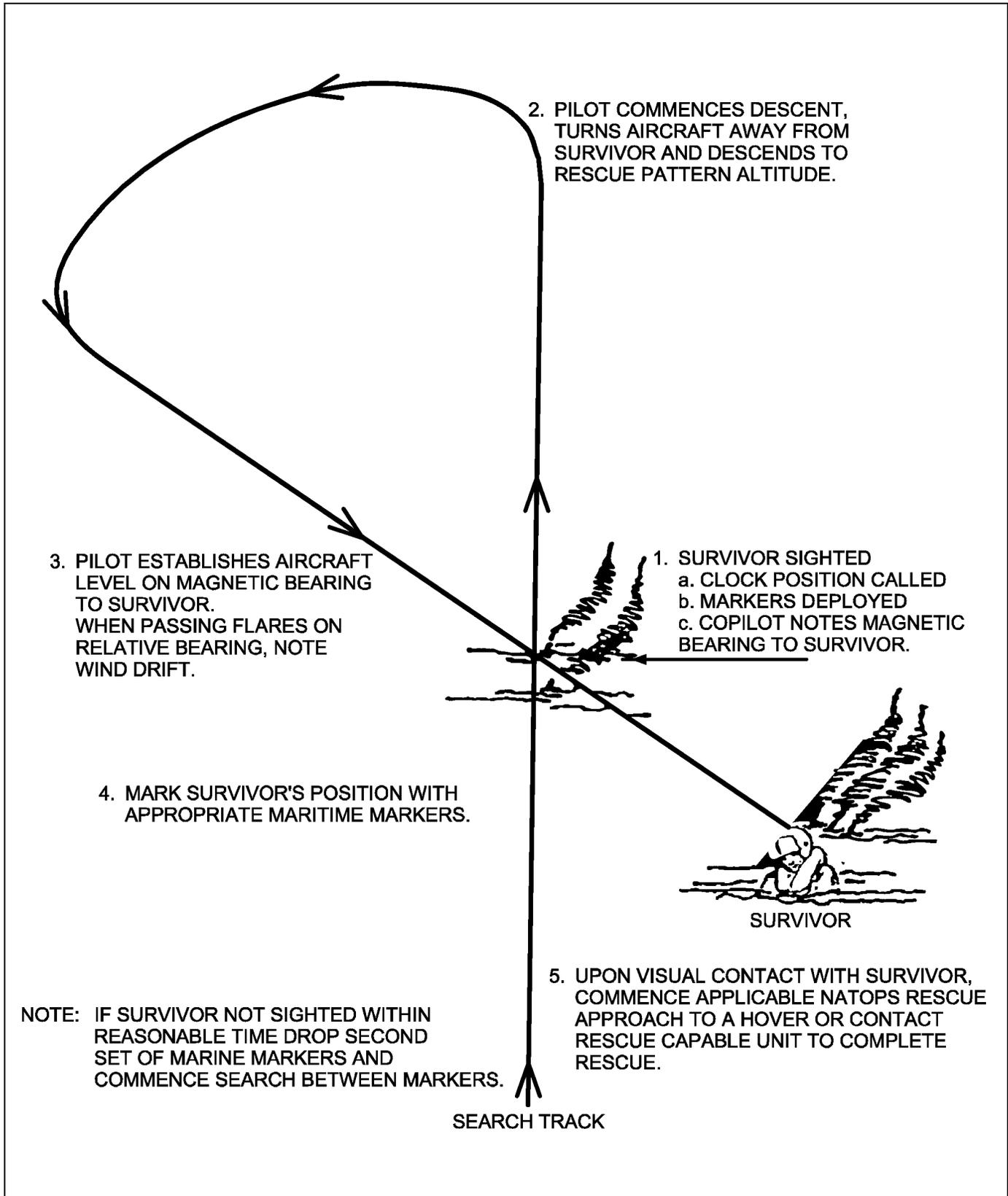


Figure 1-1. Survivor Sighting Procedures

**Note**

The AN/SSQ-83 SAR buoy is no longer in use. The AN/SSQ-57 sonobuoy tuned to channel 15 (172.75 VHF/345.5 UHF-DF) will be used as a replacement in P-3 aircraft.

**1.3 RESCUE PROCEDURES**

**1.3.1 Assessing the Rescue Situation**

Assessing the rescue situation begins with the crew brief and continues until survivor recovery. The following factors shall be continuously assessed, and any changes/updates shall be communicated to the entire crew:

1. Number/type of survivor(s)
  - a. Military or civilian
2. Location of survivors, their relation to, and distance from each other and the SRU
3. Visible, and/or known injuries of the survivor(s):
  - a. Mechanism of injury (MOI)
  - b. Conscious/unconscious
  - c. Visible bleeding
  - d. Environmental injuries
  - e. Broken bones.
4. Flotation devices inflated/not inflated/survivor face down in water.
5. Parachute entanglement problem/presence of a ballooned parachute.
6. Day or night/sea state/wind direction/water temperature.
7. Cooperative/uncooperative/combative survivor(s).
8. Fuel in the water.
9. Debris littering scene, and its relation to the survivor.
10. Presence of sea predators.
11. Feasibility of attempting multiple/single rescue.
12. Rescue order established according to apparent injuries. The survivor with the worst injuries shall be rescued first.
13. Rescue swimmer (RS) deployment options.

14. Other available rescue assets to assist.

**1.3.2 Marking of the Survivor’s Position**

Marking the survivor’s position is an important phase of the rescue operation. Accurate deployment of the marker helps to avoid losing sight of the survivor, and provides a reference to the PAC when hovering over the survivor.

**Note**

- Detailed information on survivor position-marking devices can be found in Chapter 5, Paragraph 5.7 of this publication, and NAVAIR 11-15-7 (series) publications.
  - All type T/M/S NATOPS procedures and limitations shall be strictly adhered to for the launch of any survivor position-marking devices.
1. A member of the crew spots the survivor and reports: “I have the survivor in sight at \_\_\_ o’clock, \_\_\_ yards, turn \_\_\_\_\_.”

**Note**

- Upon sighting the survivor, the aircraft is flown so as to directly overfly the survivor.
  - If not already in sight, the PNAC should attempt to locate the survivor visually as the aircraft is turning into the survivor. This will make constant visual contact as the aircraft’s nose falls onto the survivor. When in sight, verbal control should be passed to the PNAC.
2. The PAC replies: “Roger, you have verbal control,” and turns the aircraft until the crewmember commands: “roll out.”



- Should fuel be evident or suspected in the water, smoke flares should not be used. The flares may ignite the fuel.
  - When deploying a marking device from an aircraft, use caution not to strike the survivor.
  - Avoid dropping smoke flares directly upwind of the survivor as the fumes are caustic, and may injure the survivor.
3. Immediately upon passing over the survivor, a crewman marks the position by dropping a smoke flare or electric sea marker light, and reports: “Smoke/sea marker away.”

**1.3.3 Rescue Pattern**

The rescue pattern shall be flown in accordance with the applicable T/M/S NATOPS manual. During the pattern, approach, and hover, the crew can continue to assess the rescue scene, as the helicopter provides an outstanding

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vantage point for viewing the overall scenario and allows the crew to formulate the tactics and equipment to be used for the rescue. This overall view will be of great importance to the RS, as it affords a view not attainable after water entry. The factors listed in Paragraph 1.3.1 should be reassessed prior to RS deployment.

### Note

During all rescue scenarios, the RS should stay up intercommunications system (ICS)/radios as long as safely possible. This will help the RS assess the situation, and along with the entire crew, formulate a plan for recovery of the survivor(s).

### 1.3.4 Multiple Rescue Decision

A multiple rescue occurs when there is more than one survivor, and the RS remains in the water, aiding in the recovery of all survivors prior to being recovered. Sea state, visibility, and location of/distance between the survivors are all factors that should be considered before attempting a multiple rescue. To avoid fatigue, the RS shall avoid multiple rescues when a great deal of swimming (either because of distance or sea state) is required between the survivors. Additionally, the reduced visibility during a night/instrument meteorological conditions (IMC) rescue makes attempting a multiple rescue hazardous. The crew should consider either recovery or short-hauling the RS between multiple survivors if the following conditions exist:

1. A sea state of greater than 2 (Douglas Sea State Table p. 6-9 SAR TACAID)
2. Night/IMC
3. More than 25 yards between the survivors.

### 1.3.5 Rescue Hover Position



When a parachute is in the rescue area, it shall be approached no closer than one rotor diameter width outside the rotor wash area to avoid either inflating or sinking the canopy. Inflating the parachute can cause damage to the aircraft should it blow into the rotor system. Sinking the parachute could also result in the entangled survivor sinking.

The pilot shall establish a hover into the wind with the survivor at approximately the 3 o'clock position (Figure 1-2). In addition to providing good visual contact with the survivor, this position also helps to avoid having a parachute come between the RS and the survivor.

### 1.3.6 Rescue Swimmer Deployment

The RS shall enter the water and assist the survivor(s) in all cases except when the helicopter aircraft commander (HAC) determines that the circumstances will endanger the RS unnecessarily. Factors to be considered include sea state, debris in water, sea predators, or fire on the water. The RS shall be deployed either by jumping the RS from the helicopter (either 10 feet and 10 knots or 15 feet and 0 knots), or via the helicopter rescue hoist (hover altitude shall be IAW T/M/S NATOPS manual).

### Note

- During all rescue scenarios, the RS should stay up ICS/radios as long as safely possible. This will help the RS assess the situation and, along with the entire crew, formulate a plan for recovery of the survivor(s).
- The term “dressed out” applied to the RS is defined as properly attired and equipped for the planned rescue mission. When the RS is going to be deployed via jump or hoist directly into the water, or to a small surface craft that may eventually involve a water entry, the RS shall don the RS’s ensemble (Chapter 5), and any additional equipment required based on the scenario (QS, LPU-34, etc.) Prior to sitting in the doorway, the RS shall:
  1. Ensure his/her helmet and ICS cord is removed and stowed in the cabin so as not to interfere with deployment.
  2. Ensure the RS mask is correctly tied off to the RS harness shoulder.
  3. Ensure SAR helicopter breathing device (SHBD) is removed from the RS’s harness and stowed in cabin.
  4. If deployment is under night/IMC conditions, illuminate a 4-inch chemical light and insert into clamp on RS mask.
  5. If wearing a RS dry suit, all trapped air has been purged or “burped” from the dry suit.



- The crew chief (CC) shall not open the cabin door without first ensuring that all personnel in the cabin area are either strapped into a seat, or secured to the aircraft via crewman’s safety belt.
- Direct deployment (DD) procedures shall not be used if survivor still has parachute attached.
- The RS shall be deployed via the rescue hoist during all night and IMC/low-visibility operations, if any other hazards exist in the vicinity, and/or at the discretion of the HAC.
- Inhalation of composite fibers resulting from aircraft fires and/or aircraft material damage may be harmful to the RS. If smoke is present, the RS shall be deployed upwind, and will approach the aircraft in a manner as to avoid any smoke.

#### 1.3.6.1 Day/Visual Meteorological Conditions Procedures:

If the decision is made to deploy the RS, the following procedures shall be used:

1. The HAC commands: “Rig for rescue.”

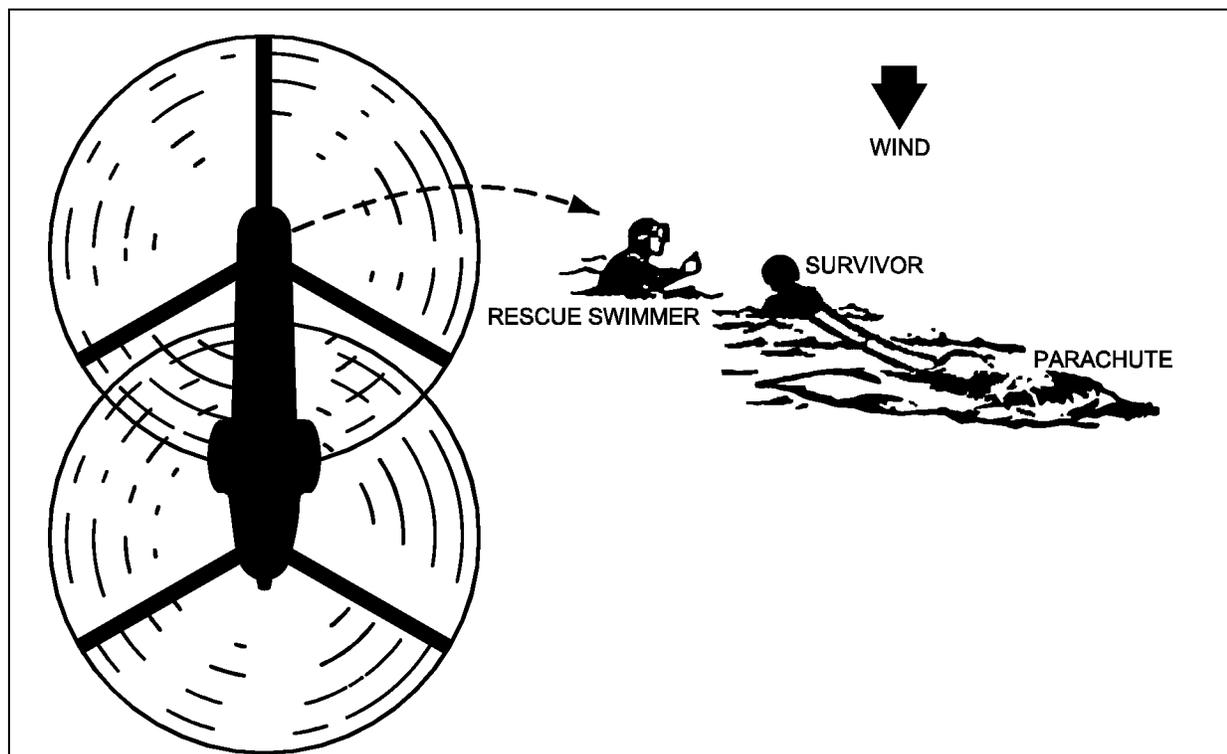


Figure 1-2. Three O’Clock Position

2. The CC replies: “Roger, unstrapping.”
3. The CC and RS shall unbuckle from their seats and immediately don crewman’s safety belts.
4. As the RS dresses out, the CC shall rig for rescue:
  - a. Don the heavy-duty hoisting glove(s).
  - b. Prepare smoke markers.
  - c. Ensure the rescue hoist is armed and operational.
  - d. Prepare rescue equipment as needed.



The CC shall not open the cabin door without first ensuring that all personnel in the cabin area are either strapped into a seat or secured to the aircraft via crewman’s safety belt.

- e. Open cabin door IAW applicable T/M/S NATOPS procedures.

5. After the CC has readied the cabin area, the CC shall check to ensure the RS is properly attired for the planned rescue evolution and is properly secured to the aircraft via a gunners belt. When satisfied, the CC will grab the back of the RS's harness, and guide the RS to a sitting position in the aircraft door.
6. The CC reports: "Rigged for rescue."
7. When established on final approach course to the survivor, and just prior to passing 30-foot altitude, the PAC commands: "Stand by to deploy swimmer."
8. The CC shall maintain a hold on the RS's harness/TRI-SAR harness (TSH) with one hand, and with the hand not holding onto the RS, signal the RS to release the crewman's safety belt by tapping the RS once on the chest.
9. Upon receiving the command, the RS removes the crewman's safety belt and ensures it is not snagged on any of the RS's equipment. The RS will give a "thumbs up" signal to the CC when ready to deploy.
10. Upon receiving the RS "thumbs up," the CC shall do a final inspection of the RS.



**WARNING**

Both the CC and RS shall ensure that the RS and/or RS's harness is not connected or snagged on the aircraft, another RS, or a previously recovered survivor. Special care shall be taken during multiple survivor rescues and training evolutions in which the RS may deploy more than once.

11. The CC reports: "swimmer ready," and continues to assess the rescue scene.
12. The PAC establishes a 10-foot/10-knot creep or a 15-foot hover and commands, "Jump . . . jump . . . jump . . . ."
13. On the PAC's third "Jump" command, the CC shall check area clear of debris, and tap the RS three times on the shoulder, releasing the grasp of the RS's harness as the RS jumps.



**WARNING**

It is extremely difficult to accurately judge height above the water; therefore, the CC shall not give the signal to the RS to jump until the pilot commands, "Jump . . . jump . . . jump . . ." over the ICS. The pilot shall remain at or below 15 feet until the CC reports: "Swimmer away."

14. After the RS exits the helicopter, the CC reports: "Swimmer away."
15. After water entry the RS signals: "I am all right" (Chapter 6). The RS shall then perform a radio check.

**Note**

In the event the RS gives the “swimmer in trouble” signal (Chapter 6), the CC shall report it to the crew and the PAC shall immediately maneuver the helicopter to the planned hoisting altitude. The CC shall direct the helicopter on top of the RS and recover the RS via the rescue hoist.

16. Crewman observes, “I am all right” hand signal (Chapter 6) from the RS and reports: “Swimmer O.K.”
  - a. The PAC maneuvers the helicopter to the planned hoisting altitude. The PAC will report: “steady hover”/“hover mode.”
  - b. The CC then directs the PAC left and back to maintain visual contact with the RS/survivor.
17. The RS performs disentanglement/recovery procedures as outlined in Chapter 3.

**1.3.6.2 Night/Instrument Meteorological Conditions Procedures**

RS deployment during night/IMC (low-visibility) conditions shall be conducted via hoist. The following procedures shall be used:



**WARNING**

The large hook is the only portion of the rescue hook to be used for hoisting personnel. The small hook of the rescue hook shall never be used to hoist personnel.

**Note**

Normal night/IMC procedures are not to be confused with DD procedures in Paragraph 1.3.8.

1. The HAC commands: “Rig for rescue.”
2. The CC replies: “Roger, unstrapping.”
3. The CC and RS shall unbuckle from their seats and immediately don crewman’s safety belts.
4. As the RS dresses out, the CC shall rig for rescue:
  - a. Don the heavy duty hoisting glove(s).
  - b. Prepare smoke markers/matrix lights.
  - c. Ensure the rescue hoist is armed and operational.
  - d. Prepare rescue equipment as needed:
    - (1) Ensure all rescue equipment/devices are properly illuminated with chemical lights.



The CC shall not open the cabin door without first ensuring that all personnel in the cabin area are either strapped into a seat or secured to the aircraft via a crewman's safety belt.

- e. Open cabin door IAW applicable T/M/S NATOPS procedures/limitations.
5. The PAC shall report: "Steady hover"/"hover mode" when achieved; this will alert the CC to the fact that the aircraft is in a safe flight regime to hook the RS to the hoist. The CC taps the cabin deck where the RS will sit for hookup to the rescue hoist.
6. The RS, wearing a properly secured crewman's safety belt, sits on the deck facing the cabin door and:
  - a. Dons the rescue strop if chosen as the hoisting device.
  - b. Locates the RS's harness/TSH lifting point and holds in one hand.

#### **Note**

The RS, rescue strop, and rescue hook shall be illuminated by a chemical light.

7. The CC brings the rescue hook into the cabin and hands it to the RS for hookup.



- The large hook is the only portion of the rescue hook to be used for hoisting personnel. The small hook of the rescue hook shall never be used to hoist personnel.
  - Being hooked into more than one safety device (gunners belt, crew seat restraint belt, large rescue hook) at one time may be hazardous to the RS should the helicopter encounter an emergency and have to ditch. The CC shall ensure that the RS is immediately released from the crewman's safety belt once the RS is properly hooked in to the large rescue hook and the CC has positive physical control of the RS.
8. The RS shall hook into the large rescue hook.
  9. The CC shall maintain a hold on the RS's harness/TSH with one hand, and with the free hand tap the RS once on the chest to signal "release crewman's safety belt."
  10. The RS will release the crewman's safety belt, and give the CC a "thumbs up" signal to indicate the RS is ready to move to the cabin door.
  11. The CC shall perform a final check of the RS by:

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- a. Ensuring the RS is properly hooked into the large rescue hook
  - b. Ensuring the RS, rescue strop, and rescue hook are illuminated with a chemical light
  - c. Ensuring RS is properly attired and equipped for planned rescue evolution and has removed helmet, ICS cord, and SHBD.
12. The CC shall maintain positive control of the RS and guide the RS to the cabin door. When satisfied that the RS is safely in the cabin door, the CC reports: "Hoist is rigged, standing by."
  13. The helicopter crew shall then maneuver the helicopter on top of the survivor using the applicable T/M/S NATOPS procedures.
  14. Once on top of the survivor, and the helicopter is maintaining a steady hover, the CC challenges: "Permission to lower swimmer."
  15. The PAC commands: "Lower swimmer."
  16. The CC shall tap the RS on the shoulder three times and upon receiving a "thumbs up" signal from the RS, place tension on the cable, lifting the RS off the deck:
    - a. If the RS's harness (HBU-23/P) is used, the CC shall lower the RS.
    - b. If the TSH is used:
      - (1) The CC shall stop hoisting when the RS is off the deck.
      - (2) The RS will adjust the straps of the TSH, and, once satisfied, the RS shall give the "thumbs up" signal to the CC indicating ready to be lowered.
  17. The CC will lower the RS. The CC shall make the following reports during hoist operations:
    - a. "Lowering swimmer."
    - b. "Swimmer halfway down."
    - c. "Swimmer in the water."
    - d. "Swimmer clear."
    - e. "Swimmer is O.K.," or "Swimmer in trouble."
  18. After entering the water, the RS separates from the rescue hook/strop and, signals: "I am all right" (see Chapter 6). The RS shall then perform a radio check.



**WARNING**

DD procedures shall not be attempted using the RS's harness (HBU-23/P). The RS could be seriously injured if unintentionally jerked from the water. Only personnel trained and qualified IAW OPNAVINST 3130.6 (series) shall attempt DD procedures.



- During normal RS deployment/recovery procedures, the RS should not remain attached to the rescue hook via his RS's harness (HBU-23/P), or remain in the rescue strop while performing a rescue.
- During high wind/high sea state evolutions, visual contact with the RS is essential; however, the RS's options and/or mobility should not be sacrificed. Attempts at keeping the RS attached to the hoist cable will restrict the RS's movements and impose an entanglement hazard. If the RS is unable to sever all connections with the aircraft, sudden impact movement or a high sea state may result in his becoming entangled, unnecessarily dragged through the water, or separated from the survivor.

**Note**

The RS may choose to hold the rescue strop if the survivor is nearby or if there is a high sea state. In this situation, the RS slips the rescue strop and hoist hook off over his head and then passes a single arm through the loop created by the rescue strop. This permits the RS to use both hands or, if being dragged by the hoist cable, to quickly release it.

19. The CC, upon observing the "I am all right" hand signal (Chapter 6), reports "swimmer is O.K.," if the RS is clear of the rescue strop the CC shall direct the PAC back and left to maintain visual contact with the RS and survivor.
20. The RS performs disentanglement/recovery procedures as outlined in Chapter 3.



The RS shall ensure that no fuel is in the vicinity when using MK 124 Mod 0 flare.

**Note**

In the event of loss of visual contact with the RS and/or survivor, the HAC shall cycle the flood/hover light. The RS and/or survivor shall illuminate the strobe light or Mk 124 Mod 0 flare to aid in reestablishing visual contact.

### 1.3.6.3 Rescue Swimmer Deployment to a Small Boat

RS deployments to small boats may involve hoisting directly to the deck of the boat, or conditions may require that the RS deploy into the water and climb aboard the boat to affect the rescue. In either situation, the RS shall be attired for water entry. If being hoisted to the small boat, RS fins may be removed (to provide footing on boat deck) and attached to the RS by threading the harness snap hook through the fin straps and attaching back to harness. This procedure will ensure the RS has fins for propulsion should he/she be required to reenter the water from the boat.

### **1.3.7 Rescue Swimmer Recovery Procedures**

The following procedures apply to day or night SAR operations:

1. Upon receiving the “ready for pick up” hand signal (Chapter 6) from the RS, the CC shall report: “I have a pick up signal” and direct the helicopter on top of the RS/survivor.



The CC shall ensure the rescue hook contacts the water before the RS touches it.

#### **Note**

The CC shall ensure that the rescue hook is equipped with a rescue device that has inherent flotation (rescue strop, rescue litter, rescue seat, rescue net, or rescue basket) and chemical lights, if needed (night/IMC).

- a. Lower and ground the hoist.
2. The CC shall observe the RS’s progress and report:
  - a. “Swimmer/survivor approaching rescue hook”
  - b. “Swimmer/survivor hooked up.”
3. Upon receiving the “raise cable” hand signal (Chapter 6) from the RS, the CC shall report: “I have a hoist signal.” The CC will simultaneously direct the PAC to a position directly over the RS/survivor (putting the RS/survivor as vertical to the rescue hoist as possible), and reel in hoist cable. The CC shall time the water action (if any) to ensure the RS/survivor are not jerked from the water.

#### **Note**

Upon hearing the “swimmer/survivor clear of the water” call from the CC, the PAC may elect to raise the helicopter (with verbal commands from the CC) to a predetermined height to ensure a wave crest does not contact the RS/survivor as they are hoisted clear.

4. The CC shall keep the PAC informed of the RS/survivor’s progress:

#### **Note**

The CC shall maintain control of the hoist cable at all times, paying particular attention to the RS/survivor as they approach the helicopter. The CC shall ensure the RS/survivor do not strike the helicopter.

- a. “Swimmer/survivor clear of the water” (“you have control forward” if applicable)
- b. “Swimmer/survivor halfway up”
- c. “Swimmer/survivor at cabin door.”

5. When the RS/survivor are at the cabin door, the CC shall position them so the survivor's back is to the CC. The RS (if possible) should place fins on cabin deck and hand(s) on cabin entrance bulkhead or handles. In this position, the RS may pull with their arms and thrust with their hips to assist the CC in pulling in the combined weight of the survivor and RS. The RS should end up in a position straddling over the top of the survivor. When ready for transition into the helicopter, the RS should both nod his/her head to the CC and yell "ready."



**WARNING**

Do not detach the RS/survivor from the rescue hook until the RS/survivor are safely in the cabin of the helicopter. Securing the RS/survivor safely in the cabin can be accomplished (once the RS and survivor are in the cabin) by the CC paying out just enough cable to close the cabin door to a point where it is resting lightly against the cable, disconnecting the RS and survivor, and securing them in the helicopter. Once the RS and survivor are secure, the CC opens the cabin door and stows the rescue hook. Ensure applicable T/M/S NATOPS airspeed restrictions are adhered to while the hoist cable is deployed from hoist assembly, and while the cabin door is not completely closed.

**Note**

The CC should grab the survivor around the waist vice grabbing the survivor's clothes/gear. This is the safest method of keeping control of the survivor during the transition into the helicopter cabin.

6. The CC grabs the survivor around the waist, simultaneously letting out hoist cable and pulling the survivor (and RS) into the helicopter
7. When the RS and survivor are completely inside the helicopter, the CC shall position him/herself in the cabin door, guarding against the RS and survivor falling out.
  - a. The CC shall report: "Swimmer/survivor aboard."
8. The CC shall pay out only enough hoist cable to allow the cabin door to be closed as far as possible without damaging the cable.
9. Once the cabin door is closed the CC can disconnect the RS and survivor from the large rescue hook and secure them in the aircraft.
10. When the CC is satisfied the RS and survivor are secured properly, the CC can then open the cabin door, seat the rescue hook, and close the cabin door (as required).
11. The CC then reports: "Rescue station secure, clear for forward flight."
12. The RS shall attend to survivor medical treatment (Chapter 7) and report survivor's condition to the HAC. At the earliest opportunity, the CC shall assist the RS with survivor medical care until flight duties require his/her attention elsewhere.

### 1.3.8 Maritime Direct Deployment Procedures

U.S. naval helicopter crews are sometimes faced with situations in which traditional RS deployment procedures are inadequate and/or put the RS at a greater-than-acceptable risk. The DD procedure was developed as a tool for use in extreme situations, such as: rescues in the surf zone, heavy seas, high winds, moving (swift) water, ice, etc. DD procedures are another tool for the RS/helicopter crew to utilize, when necessary, and are not intended to replace the survivor recovery procedures outlined in Paragraph 3.7. DD procedures shall only be utilized when the crew has determined that it is the safest method of recovery.



- DD procedures shall only be utilized by personnel qualified IAW OPNAVINST 3130.6 (series).
- The QS shall only be used in conjunction with the TSH for DD and recovery of survivors. The decision to use DD procedures on a survivor with a known or suspected head, neck, spinal, or other severe injury should only be exercised when the use of traditional survivor recovery procedures (Paragraph 3.7) would place the lives of the RS and/or survivor at greater risk.
- DD procedures shall not be attempted using the RS's harness (HBU-23/P). The RS could be seriously injured if unintentionally jerked from the water.
- DD procedures should not be used on aviators who have ejected from aircraft, and shall not be used on aviators still entangled in a parachute.
- The QS shall not be deployed to survivors without the RS. The survivors may not know how to properly use it.

#### Note

- Use of the term “direct deployment” always refers to the RS wearing a TSH in conjunction with a quick strop (QS) assembly. The significant difference in DD from the traditional RS deployment/survivor recovery procedure is that the RS never unhooks from the rescue hook during the entire rescue evolution.
- Hand signals are the primary means of communication for DD procedures.
- During night/IMC operations the QS safety strap may be illuminated. The CC shall utilize a chemical light strap from the SAR equipment bag to attach a chemical light to the friction buckle of the safety strap in the following manner: 2 opposing hooks connected to the outboard side of the friction buckle and 1 hook connected to a chemical light.

1. The CC opens the cabin door and brings the rescue hook into the helicopter for RS hookup.



Being hooked into more than one safety device (gunners belt, crew seat restraint belt, large rescue hook) at one time may be hazardous to the RS should the helicopter encounter an emergency and have to ditch. The CC shall ensure that the RS is immediately released from the crewman’s safety belt once the RS is properly hooked into the large rescue hook and the CC has positive physical control of the RS.



- The large hook is the only portion of the rescue hook to be used for hoisting personnel. The small hook of the rescue hook shall never be used to hoist personnel.
  - The SAR helicopter aircrew breathing device holster (HABDH) shall be removed from the TSH assembly of the aviation RS prior to deployment (day or night) from the helicopter.
2. The RS, wearing a properly secured crewman’s safety belt, sits on the deck facing the cabin door and hooks into the large rescue hook in the following order:
- a. TSH lifting V-Ring (always first).
  - b. Rescue strop (double lift recovery only; Paragraph 3.8).
    - 1) RS routes the rescue strop over the preferred shoulder and maintains control of it until it is utilized on the survivor.
  - c. QS (always last):

**Note**

The detachable lifting strap of the QS can be identified by the red ban of webbing located next to the detachable lifting strap’s V-Ring assembly.

- (1) Ensure the detachable lifting strap is routed through the friction lock prior to hookup.
- (2) Ensure the detachable lifting strap V-ring is always the last object hooked up to the large rescue hook.

**Note**

The RS should slide the QS friction keeper as far out as possible, ensuring as large an opening as possible is maintained in the QS assembly. This will make employment of the QS over the survivor’s head and shoulders easier.

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- (3) RS routes the QS over the preferred shoulder and maintains control of it until employed on the survivor.
  - d. When RS is properly equipped, RS gives the CC the “thumbs up” signal.
3. CC grabs the back of the RS’s TSH, and taps the RS once on the chest:
  - a. Upon receiving the signal, the RS releases the crewman’s safety belt.
4. CC maintains positive control of RS and directs the RS to the cabin door:
  - a. RS sits in cabin door.
5. CC directs the helicopter over the survivor; the HAC establishes a steady hover over the survivor and commands: “Stand by to lower swimmer.”
6. CC taps the RS three times on the shoulder; upon receiving a “thumbs up” signal from the RS reports: “Swimmer ready.”
7. The HAC commands: “Lower swimmer.”
8. The CC hoists the RS off the deck:
  - a. The RS adjusts the straps of the TSH for proper fit and comfort; when satisfied, gives the CC a “thumbs up” signal, meaning “ready to be hoisted.”

### Note

As the RS is being lowered to the water, the RS shall try to maintain visual contact with the survivor at all times.

- b. The CC reports “swimmer on the way down.” The CC continuously keeps the HAC apprised of the RS’s position.

### Note

The RS should be placed in the water no farther than 2–3 feet from the survivor. This can be accomplished by stopping the RS approximately 10 feet above the water, and as the RS hand signals the CC, the CC directs the HAC into the precise position required.

9. Upon RS water entry:
  - a. The CC reports “swimmer in the water.”

### Note

The “I am alright” hand signal is not required for DD procedures by the RS.

10. Upon RS contact with the survivor, the CC reports: “swimmer has engaged the survivor.”



When using this procedure in heavy seas, swift water, etc., the CC must take extreme care to ensure the proper amount of hoist cable is paid out. Too little cable may cause the RS/survivor to be jerked out of the water as the RS/survivor enter the trough of a wave. Too much cable paid out may cause the RS/survivor to become entangled in the hoist cable, or the cable to become entangled in debris.

11. The CC will simultaneously direct the PAC away from the RS/survivor (putting the RS/survivor at the helicopter's 2 o'clock position), while paying out hoist cable. The CC shall ensure that enough slack is left in the hoist cable to compensate for RS movement, aircraft movement, and water action:
  - a. Do not allow the hoist cable to coil in the water.
  - b. Keep all of the deployed hoist cable between the helicopter and the RS/survivor.
12. The RS performs DD survivor recovery procedures IAW Paragraph 3.8.
13. The CC receives the "raise cable" hand signal (Chapter 6) from the RS and reports: "I have a hoist signal."
14. The CC will simultaneously direct the PAC to a position directly over the RS/survivor (putting the RS/survivor as vertical to the rescue hoist as possible), and reel in hoist cable. The CC shall time the water action (if any) to ensure the RS/survivor are not jerked from the water.

#### Note

Upon hearing the "swimmer/survivor clear of the water" call from the CC, the PAC may elect to raise the helicopter (with verbal commands from the CC) to a predetermined height to ensure a wave crest does not contact the RS/survivor as they are hoisted clear.

15. Once the RS/survivor are clear of the water, the CC reports: "swimmer/survivor clear of the water," and continuously updates the HAC on the RS/survivor position (i.e., "swimmer/survivor halfway up," "at the cabin door," etc.).



Do not detach the RS/survivor from the rescue hook until the RS/survivor are safely in the cabin of the helicopter. Securing the RS/survivor safely in the cabin shall be accomplished (once the RS and survivor are in the cabin) by the CC paying out just enough cable to close the cabin door to a point where it is resting lightly against the cable, disconnecting the RS and survivor, and securing them in the helicopter. Once the RS and survivor are secure, then CC opens the cabin door and stows the rescue hook. Ensure applicable T/M/S NATOPS airspeed restrictions are adhered to while the hoist cable is deployed from hoist assembly, and while the cabin door is not completely closed.

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16. Recover RS/survivor using normal recovery procedures IAW Paragraph 1.3.7, items 3–12.



The CC shall not grab the survivor in any other manner than around the waist (Figure 1-3). Grabbing the survivor's clothes/gear or the QS may loosen the QS enough to allow the survivor to slip out during transition into the helicopter cabin.

17. The CC shall grab the survivor around the waist, simultaneously letting out hoist cable and pulling the survivor (and RS) into the helicopter.
18. When the RS and survivor are completely inside the helicopter, the CC shall position him/herself in the cabin door, guarding against the RS and survivor falling out:
  - a. The CC shall report: "swimmer/survivor aboard."
19. The CC shall pay out only enough hoist cable to allow the cabin door to be closed as far as possible without damaging the cable.
20. Once the cabin door is closed the CC shall disconnect the RS and survivor from the large rescue hook and secure them in the aircraft.
21. When the CC is satisfied the RS and survivor(s) are secured properly, the CC shall then open the cabin door, seat the rescue hook, and close the cabin door (as required).
22. The CC then reports: "Rescue station secure, clear for forward flight."

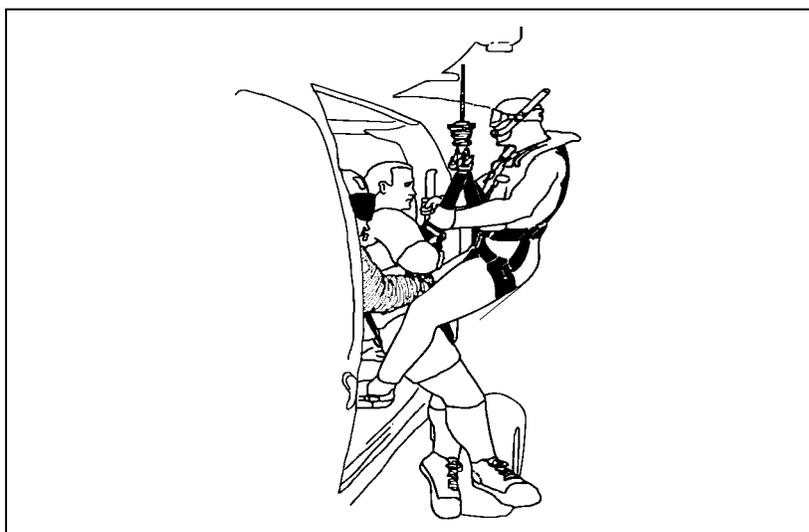


Figure 1-3. Crew Chief Grabs the Survivor Around the Waist

## 1.4 RESCUE EQUIPMENT RIGGING, DEPLOYMENT AND RECOVERY PROCEDURES

The selection of the rescue equipment/recovery devices should be made prior to RS deployment, or as early as possible into the rescue scenario. The rescue equipment selected is determined primarily by the physical conditions of the survivor(s), and the type rescue (single or multiple survivors). It is essential that both the CC and RS are knowledgeable in the application and utilization of all rescue devices, hand signals, and voice procedures. Chapter 3 details RS procedures for various rescue devices. Chapter 6 contains RS hand signals for devices, hoist movement, equipment, and emergencies. Although voice procedures for hoisting are standard, they may vary for individual devices.



### WARNING

- In all situations where two or more survivors are to be lifted simultaneously, the weight-bearing limitations of the helicopter rescue hoist system shall be considered.
- In all situations where it is required that the CC rig rescue equipment for deployment to a RS, and/or survivor in the water, the CC shall ensure another member of the crew has the RS/survivor in sight prior to directing attention to rigging the rescue equipment in the aircraft cabin.

### Note

- The CC shall maintain positive control of the survivor throughout the survivor's transition from the rescue hoist into the helicopter cabin, until the survivor is properly secured into the aircraft.
  - The RS may communicate the rescue device of choice at any time during the rescue scenario, including before RS deployment. The CC should rig the rescue device at the earliest possible opportunity to ensure it is ready for immediate deployment.
1. The RS communicates: "deploy \_\_\_\_\_" via hand signal (see Chapter 6), and radio (whenever possible).
  2. The CC acknowledges receipt of RS's hand signal with a "thumbs up," and/or radio (whenever possible), and communicates the request to the HAC.
  3. The HAC/PAC commands: "Rig the \_\_\_\_\_."
  4. The CC acknowledges the command, brings the rescue hook into the cabin, and rigs the rescue device as appropriate.
  5. The CC reports: "\_\_\_\_\_ rigged, standing by to deploy \_\_\_\_\_."
  6. The PAC commands: "Deploy \_\_\_\_\_."
  7. The CC acknowledges the command and lowers the device utilizing standard voice procedures:
    - a. "Lowering \_\_\_\_\_"

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- b. “\_\_\_\_\_ halfway down”
- c. “\_\_\_\_\_ in the water.”



The CC shall closely monitor the amount of hoist cable that is deployed during all rescue operations. The CC shall ensure that enough cable is deployed to compensate for aircraft movement and wave action/water movement. Too much cable deployed will become a hazard to the RS and/or survivor should the cable become entangled with them, the rescue device, or debris in the water.

- 8. Once the selected rescue device is in the water, the CC shall keep the PAC informed of the RS/survivor’s progress utilizing standard voice procedures:
  - a. “RS/survivor approaching the hook.”
- 9. The RS places the survivor in the selected rescue device per the procedures in Chapter 3, Paragraph 3.9:

### Note

The CC shall make every attempt to ensure the rescue device used is being properly employed by the RS; if a deviation has occurred, the CC shall make every attempt to communicate with the RS, and ascertain the problem or RS’s intentions.

- a. The CC reports: “RS/survivor hooked up.”
- 10. Upon receiving the “raise cable” hand signal (Chapter 6) from the RS or survivor, the CC reports: “I have a hoist signal.”



- The CC shall make every attempt to ensure the hoist cable is not entangled prior to raising the hoist.
  - In all cases (whether the survivor is determined to be combative, panicked, or cooperative) the rescue crewman shall not hoist survivors from an overland or maritime environment without the proper application of the selected rescue device to include safety straps or safety devices outlined in this manual.
- 11. The CC commences hoisting using standard voice procedures:
    - a. “RS/survivor clear of the water, you have control forward”:
      - (1) The PAC replies: “Roger, I have control forward.”

- b. "RS/survivor halfway up."
- c. "RS/survivor at cabin door."



In all situations where it is required that the CC divert his/her attention from personnel still in the water, the CC shall ensure another member of the crew has the remaining personnel in sight prior to losing visual contact with them.

- 12. Upon arrival of the survivor at the aircraft cabin door:
  - a. The CC shall maneuver the survivor so the survivor's back is to the CC.
  - b. The CC should grab the survivor around the waist, with one hand, and with the other hand in front of the survivor, guide the survivor into the aircraft cabin.
- 13. The CC lowers the rescue hoist cable, while simultaneously pulling the survivor into the aircraft, and onto the cabin deck.



Do not detach the RS/survivor from the rescue hook until the RS/survivor are safely in the cabin of the helicopter, and the cabin door is closed (if the chosen rescue device allows the cabin door to be closed).

**Note**

If the chosen rescue device does not allow for the cabin door to be closed, the CC shall maintain physical control of the survivor at all times until the survivor is secured safely inside the aircraft cabin.

- 14. When the survivor is completely inside the helicopter, the CC shall position him/herself in the cabin door, guarding against the survivor falling out:
  - a. The CC shall report: "Survivor aboard."

**Note**

Ensure applicable T/M/S NATOPS airspeed restrictions are adhered to while the hoist cable is deployed from the aircraft rescue hoist assembly and while the cabin door is not completely closed.

- 15. The CC shall pay out only enough hoist cable to allow the cabin door to be closed as far as possible without damaging the cable.

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16. Once the cabin door is closed, the CC shall:
  - a. Remove the survivor from the rescue device.
  - b. Secure the survivor in an aircraft seat.
  - c. If applicable, complete survivor flotation procedures IAW Paragraph 1.5.
  - d. Evaluate the survivor's condition, and report it to the HAC.
17. When the CC is satisfied the survivor is properly secured, the CC can then open the cabin door and continue with RS/survivor recovery procedures, or seat the rescue hook, and close the cabin door (as required).
18. The CC then reports: "Rescue station secure, clear for forward flight."

### 1.4.1 Rescue Hook

The rescue hook is the primary rescue device used in all rescue operations and is always used in conjunction with other devices for recovering survivors and transferring personnel. When the rescue hook is employed, the following special notes, warnings, and procedures apply:

#### Note

- If the UH-1N helicopter is utilized as the SRU, the RS shall connect the survivor's gated D-Ring directly into the large rescue hook. If dual hoisting is desired, the RS shall then hook the RS's harness lifting V-Ring directly into the large rescue hook. This note applies to all survival harnesses that utilize a Gated D-Ring as a hoisting point.
- If the RS is wearing the TSH, the RS shall connect the survivor's Gated D-Ring directly into the large rescue hook. If dual hoisting is desired, the RS shall then hook the TSH lifting V-Ring into the large rescue hook. This note applies to all survival harnesses that utilize a gated D-Ring as a hoisting point.
- Due to the design characteristics of the CMU-30 and CMU-33 Type I survival vests, it is necessary to hook the survivor's gated D-Ring directly into the large rescue hook, regardless of what harness the RS is using. If dual hoisting is desired, the RS shall then hook the lifting V-Ring from the RS's harness into the large rescue hook. If this procedure is not followed (RS hooks his/her snap hook into the survivor's gated D-Ring), the survivor may hang too far below cabin deck and CC may not be able to pull up into the aircraft.
- If possible, use the rescue strop instead of the gated D-Ring of the CMU-30/33 Type I survival harness for hoisting the survivor.

**1.4.1.1 Rigging the Rescue Hook**



The large hook is the only portion of the rescue hook to be used for hoisting personnel. The small hook of the rescue hook shall never be used to hoist personnel.

1. The CC shall ensure a rescue device (normally the rescue strop) with inherent flotation ability is attached to the rescue hook prior to lowering it to the RS/survivor.
2. During night/IMC operations the rescue hook shall be illuminated. The CC shall utilize a chemical light strap from the SAR equipment bag to attach a chemical light to the rescue hook equipment ring (Figure 1-4).

**1.4.1.2 Rescue Hook Deployment**



- Extreme care shall be used not to place fingers in or around the hoist assembly bumper compressing spring due to possibility of a crushing injury to fingers during hoisting operations.
- When lowering the rescue hook to any surface (water, ship, ground, etc.), the CC shall always ensure the rescue hook is grounded prior to any personnel coming in contact with it. Failure to ground the hook will result in a minor electrical shock to the person that it comes in contact with, and the arcing electricity may ignite any fuel in the area.
- The CC shall closely monitor the amount of hoist cable that is deployed during all rescue operations. The CC shall ensure that enough cable is deployed to compensate for aircraft movement and wave action/water movement. Too much cable deployed will become a hazard to the RS and/or survivor should the cable become entangled with them, the rescue device, or debris in the water.

**1.4.1.3 Rescue Hook Recovery**



Extreme care shall be used not to place fingers in or around the hoist assembly bumper compressing spring due to the possibility of a crushing injury to fingers during hoisting operations.



- The CC shall make every attempt to ensure the hoist cable is not entangled in any way prior to raising the hoist.
- The CC shall use extreme caution to ensure that the survivor's gated D-Ring and the RS's harness snap hook are not disconnected during the transition into the cabin. The CC shall be vigilant and ensure that the survivor's gated D-Ring and the RS's snap hook do not twist and inadvertently disconnect. This warning applies to all survival harnesses that utilize a Gated D-Ring as a hoisting point.

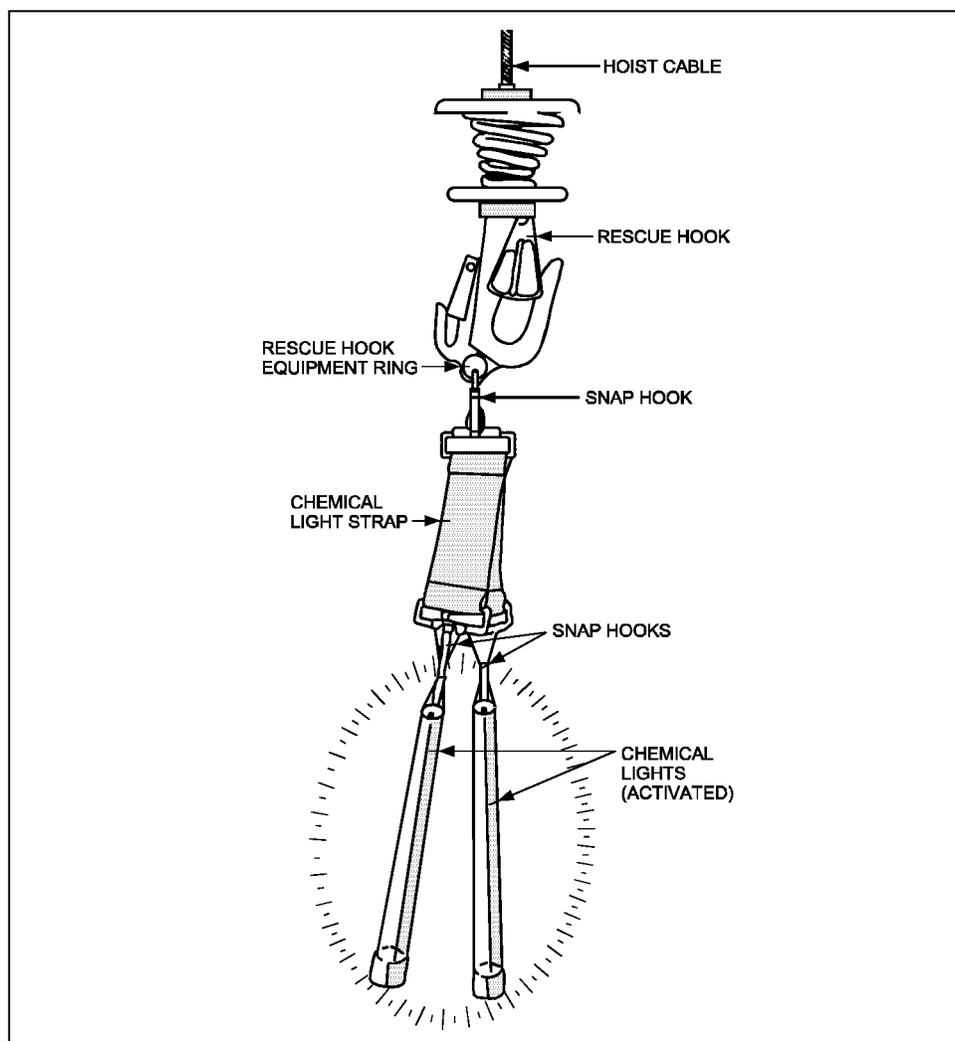


Figure 1-4. Rescue Hook with Chemical Lights Attached to the Equipment Ring

### 1.4.2 Rescue Strop

The rescue strop is primarily used on nonaviator/civilian survivors, and allows for the RS and survivor to be hoisted at the same time. When the rescue strop is employed, the following special notes, warnings, and procedures apply:



Deploying the rescue strop to a nonaviator survivor without the aid of a RS is not recommended and should only be performed when no RS is readily available from a nearby SRU, and immediate survivor recovery is deemed necessary. Nonaviator personnel are not familiar with the rescue strop procedures and self-application of rescue strop arm retaining straps is near impossible. Rescue strop recovery without proper application of the arm retaining straps may result in survivor falling out of the rescue strop during recovery.

**Note**

If possible, use the rescue strop vice the gated D-Ring of the CMU-30/33 Type I survival harness for hoisting the survivor.

#### 1.4.2.1 Rigging the Rescue Strop

**Note**

- The CC shall ensure the rescue strop arm retaining straps are properly stowed prior to lowering the rescue strop to the RS/survivor.
- During night/IMC operations the free end of the rescue strop shall be illuminated. The CC shall utilize a chemical light strap from the SAR equipment bag to attach a chemical light to the lifting V-Ring of the free lifting strap (Figure 1-5).

The CC shall bring the rescue hook into the cabin, and hook one of the rescue strop lifting V-Rings into the large rescue hook.

#### 1.4.2.2 Deploying the Rescue Strop



The CC shall closely monitor the amount of hoist cable that is deployed during all rescue operations. The CC shall ensure that enough cable is deployed to compensate for aircraft movement and wave action/water movement. Too much cable deployed will become a hazard to the RS and/or survivor should the cable become entangled with them, the rescue device, or debris in the water.

### 1.4.2.3 Rescue Strop Recovery



- The CC shall make every attempt to ensure the hoist cable is not entangled in any way prior to raising the hoist.
- In all cases (whether the survivor is determined to be combative, panicked, or cooperative) the rescue crewman shall not hoist survivors from an overland or maritime environment without the proper application of the selected rescue device to include safety straps or safety devices outlined in this manual.

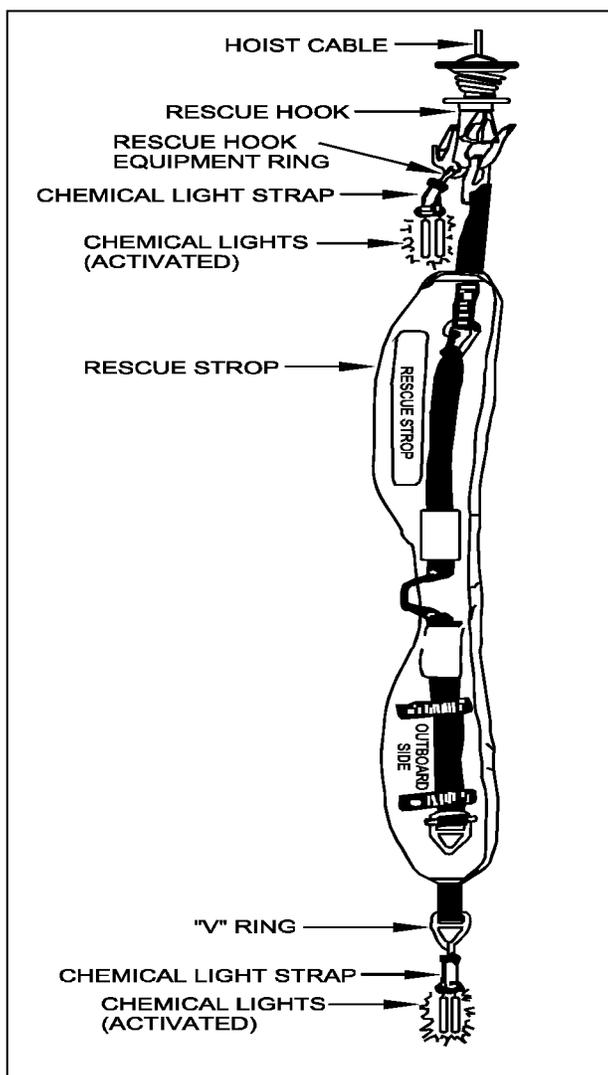


Figure 1-5. Rescue Strop with Chemical Lights Attached to the Free End

1. When the survivor is at the cabin door, the CC should grab the survivor around the waist, or the rescue strop assist handle (secondary) with one hand.
2. With the other hand in front of the survivor, guide the survivor into the aircraft cabin.
3. Once the cabin door is closed, the CC shall:
  - a. Release the rescue strop arm retainer straps and remove the rescue strop from the survivor.
  - b. Secure survivor into aircraft seat.

**1.4.3 Collapsible Rescue Basket (McCauley Basket)**

**Note**

The collapsible rescue basket (McCauley Basket) was designed for use in helicopters that do not routinely employ a RS as part of the crew. The rescue basket is a simple and safe rescue device that can be lowered to a survivor (military or civilian) and easily utilized without RS assistance. The rescue basket is designed for lifting one survivor at a time. When the rescue basket is employed, the following special notes, warnings, and procedures apply. (See Figure 1-6.)

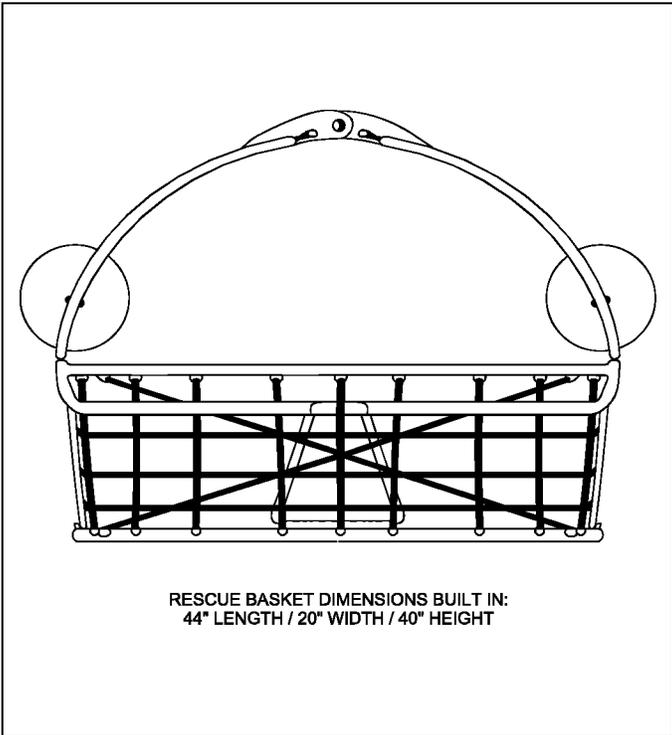


Figure 1-6. Collapsible Rescue Basket; Built-In: 44" Length x 20" Width x 40" Height

### 1.4.3.1 Rigging the Rescue Basket

#### Note

During night/IMC operations there are no specific points to illuminate on the rescue basket. The CC shall utilize a chemical light strap from the SAR equipment bag and attach a chemical light to the rescue hook equipment ring.

1. The collapsed rescue basket is laid flat on the cabin deck; the CC shall grasp the upper frame of the rescue basket and lift straight up (Figure 1-7).
2. The CC shall ensure that each of the four internal support brackets of the collapsible rescue basket are moved into the locked position. The CC shall visually verify that all four supports are fully secured into the locking mechanism.
3. Ensure bail locking device is engaged.
4. Hook large rescue hook into the lifting eye of the rescue basket.

### 1.4.3.2 Rescue Basket Deployment



#### WARNING

The CC shall closely monitor the amount of hoist cable that is deployed during all rescue operations. The CC shall ensure that enough cable is deployed to compensate for aircraft movement and wave action/water movement. Too much cable deployed will become a hazard to the RS and/or survivor should the cable become entangled with them, the rescue device, or debris in the water.

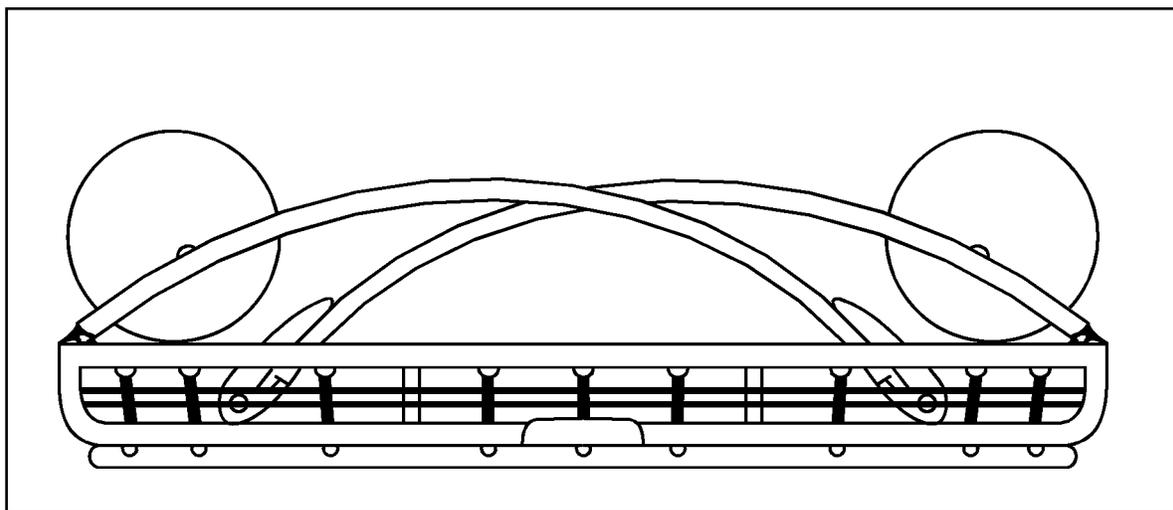


Figure 1-7. Collapsible Rescue Basket; Broken-down: 44” Length x 20” Width x 9.5” Height



The rescue basket is lightweight and may become unstable while hoisting down to the water due to winds or rotor wash. The CC shall use extreme care to avoid striking survivor/RS or obstacles with the rescue basket.

### 1.4.3.3 Rescue Basket Recovery



The CC shall make every attempt to ensure the hoist cable is not entangled in any way prior to raising the hoist.

1. Once the rescue basket is at the cabin door, the CC shall ensure the survivor remains inside the rescue basket until ordered to disembark (Figure 1-8).
2. The CC will simultaneously pull rescue basket into aircraft cabin while slowly reeling out hoist cable until rescue basket is far enough into cabin to safely disembark the survivor.
3. The CC shall close the cabin door, leaving just enough room for the hoist cable (without crimping it), remove the survivor from rescue basket, and secure the survivors in the cabin. Continue until all survivors are recovered.

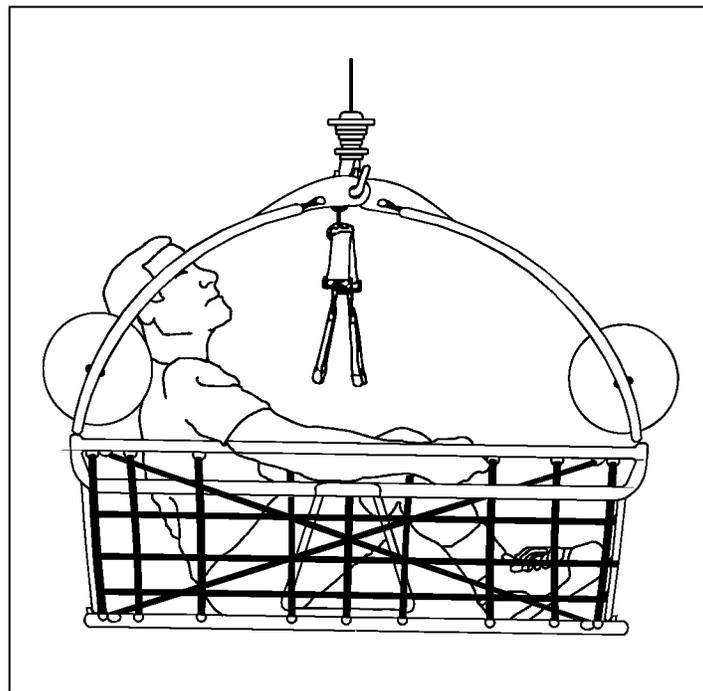


Figure 1-8. Survivor Aboard the Collapsible Rescue Basket

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4. Upon recovery of last survivor/RS, remove the rescue hook from lifting point and stow basket as necessary.
5. Open cabin door and stow rescue hook.

### 1.4.4 Rescue Net

The rescue net is used as a rescue device primarily in the case of multiple survivors. The rescue net is a simple and safe rescue device that can accommodate up to two survivors, or one survivor accompanied by the RS during hoisting. When the rescue net is employed, the following special notes, warnings, and procedures apply.

#### 1.4.4.1 Rigging the Rescue Net

##### Note

During night/IMC operations the rescue net shall be illuminated. The CC shall utilize two chemical light straps from the SAR equipment bag, and attach a chemical light to the nylon rope just above the middle frame flotation on both sides of the rescue net opening (Figure 1-9).

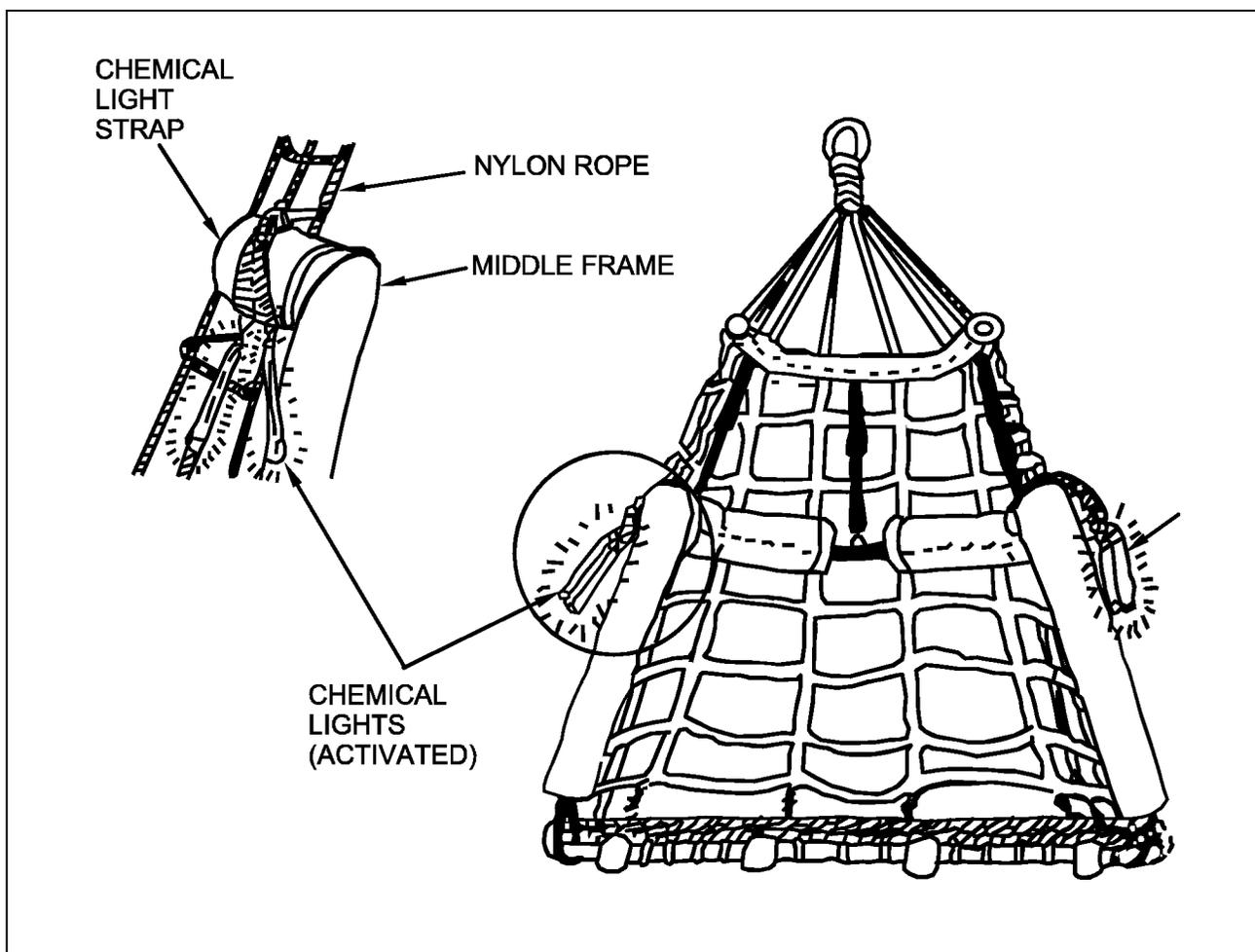


Figure 1-9. Rescue Net with Chemical Lights Attached

**Note**

Assembly of the rescue net outside the cabin door with the net attached to the rescue hook via the lifting ring will expedite the assembly evolution.

1. The lower frame is unfolded face down, allowing the frame to snap open.
2. The rescue net is suspended on the rescue hook by the lifting ring, and the sleeves of the upper support ribs are slid over the swivel joints to rest on the support rib stops (Figure 1-10).

**Note**

Refer to NAVAIR 13-1-6.5 for release pins attachment.

3. The lower support rib is folded up and connected to the middle frame trip ring with release pins (Figure 1-11).
4. The CC shall ensure the rescue net safety strap is attached to the proper anchor point of the cabin deck prior to rescue net deployment to expedite recovery operations.

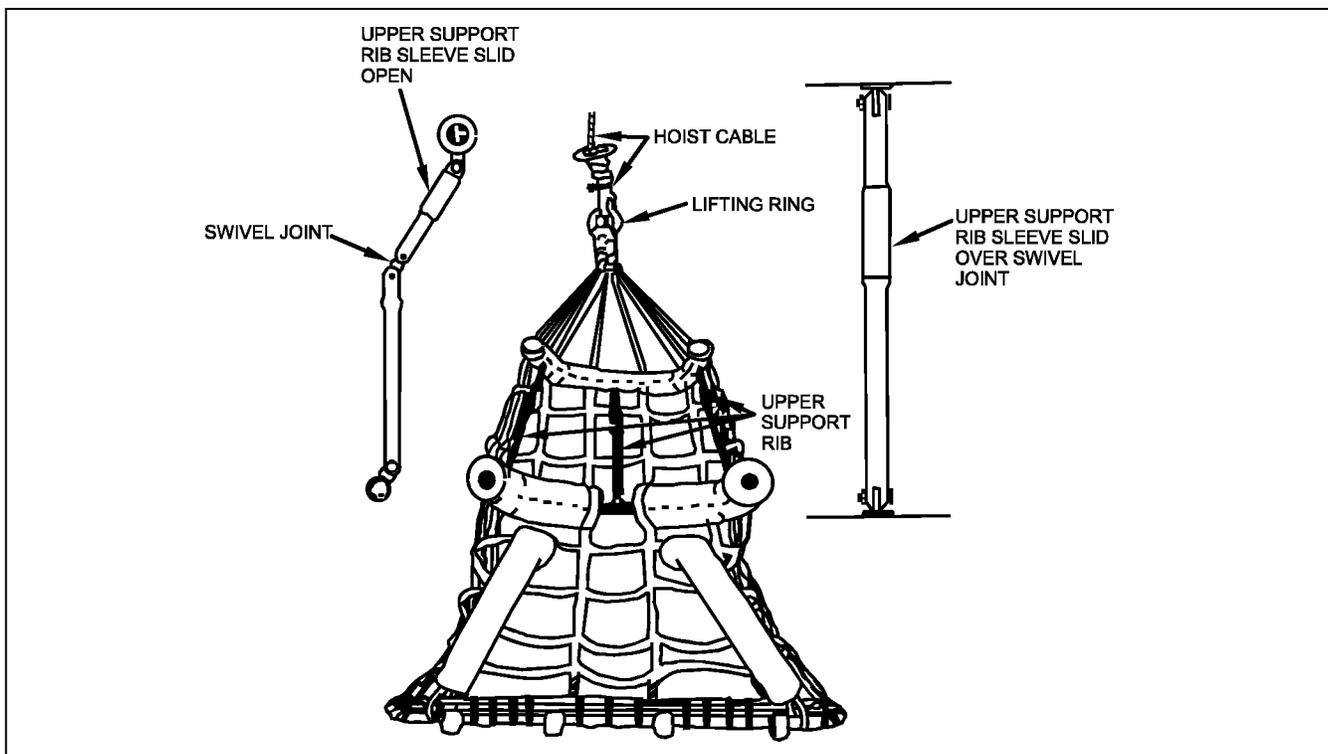


Figure 1-10. Upper Support Rib Sleeves Slide over Swivel Joints

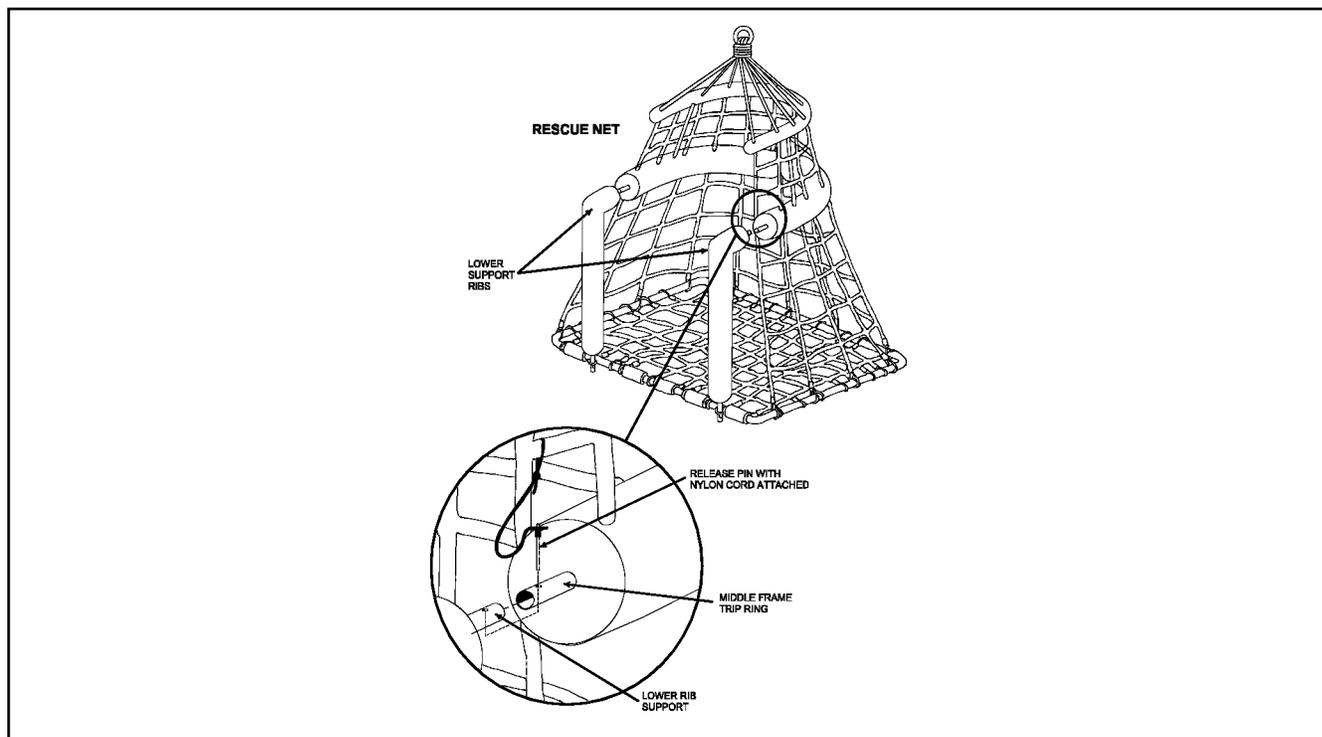


Figure 1-11. Lower Support Ribs Folded up and Connected to the Middle Frame Trip Ring

#### 1.4.4.2 Rescue Net Deployment



- The CC shall closely monitor the amount of hoist cable that is deployed during all rescue operations. The CC shall ensure that enough cable is deployed to compensate for aircraft movement and wave action/water movement. Too much cable deployed will become a hazard to the RS and/or survivor should the cable become entangled with them, the rescue device, or debris in the water.
- The rescue net is lightweight and may become unstable while hoisting down to the water due to winds or rotor wash. The CC shall use extreme care to avoid striking survivor/RS or obstacles with the rescue net.

1.4.4.3 Rescue Net Recovery



- The CC shall make every attempt to ensure the hoist cable is not entangled in any way prior to raising the hoist.
  - The CC shall not transfer the survivor(s) into the aircraft cabin without first connecting the two safety “V” straps snap hooks to each side of the rescue net via the V-Rings attachment points. Failure to connect the safety straps will allow the rescue net to swing out, and away from the helicopter as the survivor exits the net, endangering both the exiting survivor, and any personnel still inside the rescue net.
1. Once the rescue net is at the cabin door, the CC shall connect the two safety strap snap hooks to the V-Rings on the lower frame of the rescue net (Figure 1-12).
  2. The CC shall pull the safety straps tight and report: “Safety straps connected”:
    - a. The PAC replies: “Roger, board survivors.”

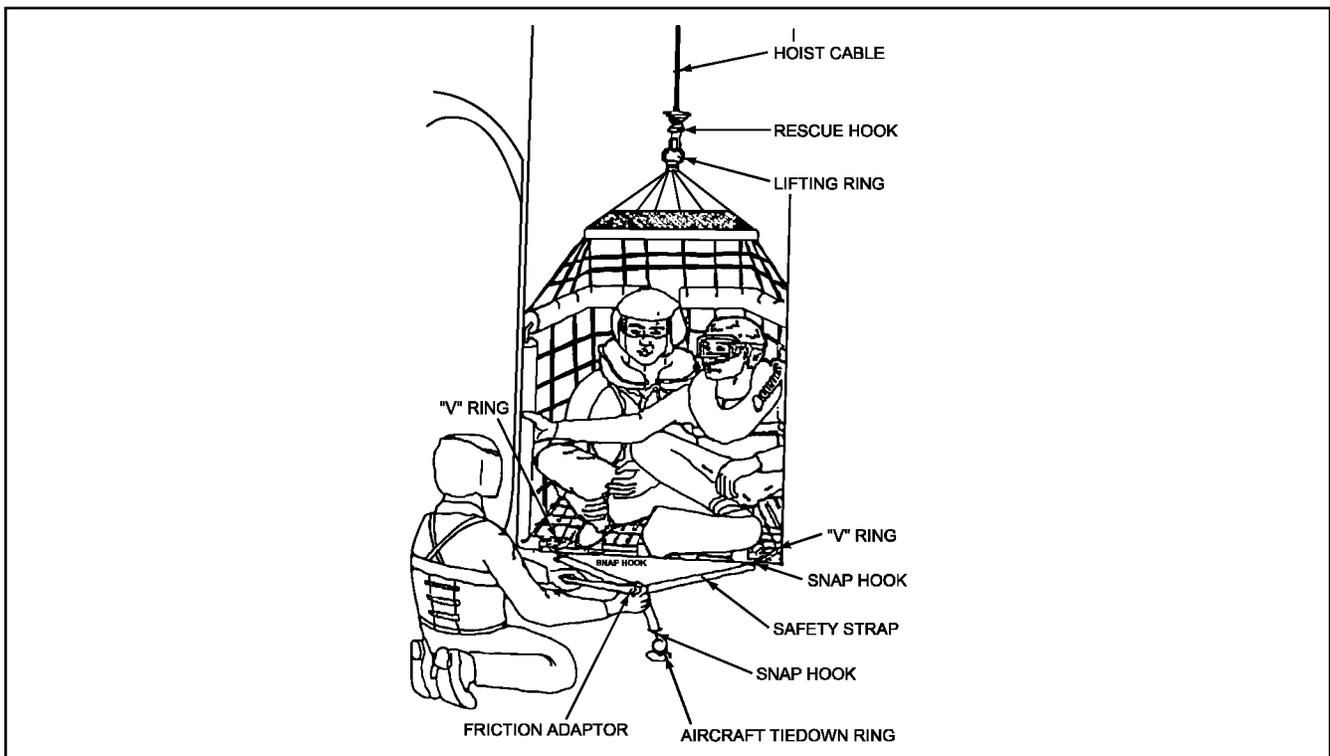


Figure 1-12. The Crew Chief Connects the Safety Strap to the V-Rings of the Rescue Net and Pulls it Tight

**Note**

If the RS is accompanying one survivor in the rescue net, the survivor shall be boarded first.

3. The CC shall board one survivor at a time, ensuring the first survivor is safely secured into a seat before diverting attention to the second survivor.

**1.4.5 Rescue Seat**

The rescue seat is designed for use in the maritime or overland environment and is primarily used for self-recovery of aviators without the assistance of a RS. When the rescue seat is employed, the following special notes, warnings, and procedures apply:



The rescue seat can only be utilized in a maritime environment if it has a flotation collar installed.

**1.4.5.1 Rescue Seat Rigging**

**Note**

During night/IMC operations the rescue hook equipment ring shall be illuminated. The CC shall utilize a chemical light strap from the SAR equipment bag to attach a chemical light to the rescue hook equipment ring.

1. The CC shall ensure all seats are stowed in the “UP” position.
2. The CC shall ensure all safety straps are properly stowed.
3. The CC shall bring the rescue hook into the cabin and hook the large rescue hook into the rescue seat hoisting point (Figure 1-13).

**1.4.5.2 Rescue Seat Deployment**



The rescue seat should not be deployed to civilian survivors without the aid of a RS.

The CC shall closely monitor the amount of hoist cable that is deployed during all rescue operations. The CC shall ensure that enough cable is deployed to compensate for aircraft movement and wave action/water movement. Too much cable deployed will become a hazard to the RS and/or survivor should the cable become entangled with them, the rescue device, or debris in the water.

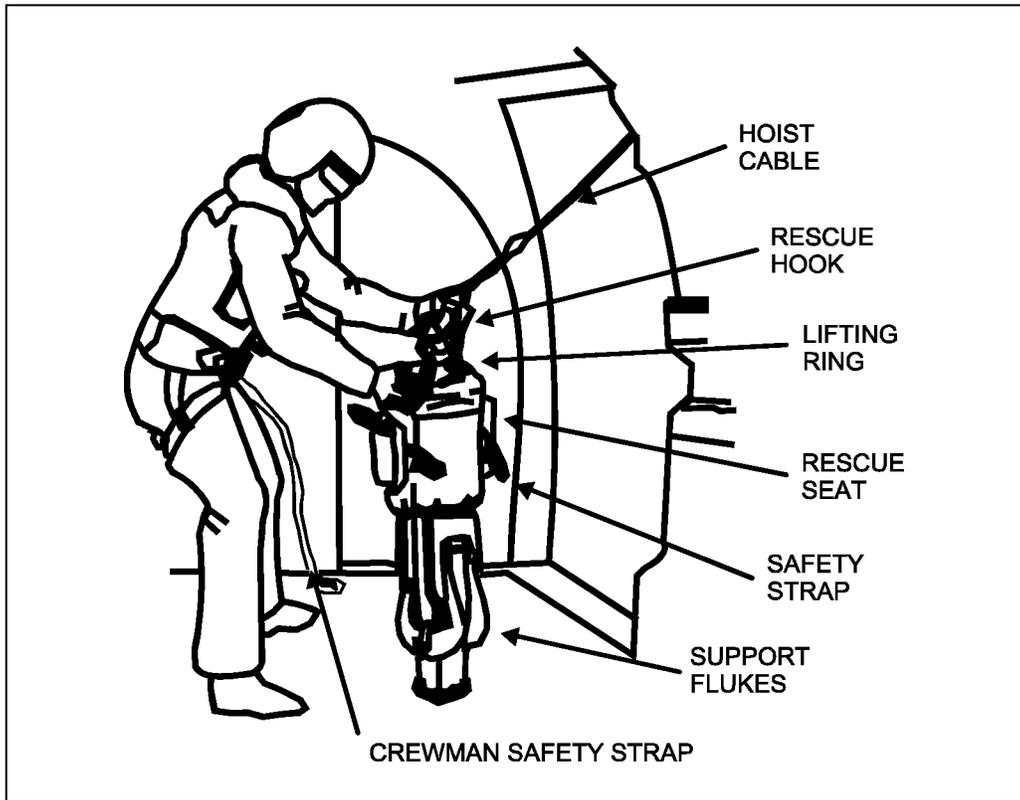


Figure 1-13. The Crew Chief Connects the Rescue Seat into the Large Rescue Hook

### 1.4.5.3 Rescue Seat Recovery



- The CC shall make every attempt to ensure the hoist cable is not entangled in any way prior to raising the hoist.
- Do not grab the survivor from the back. This could cause the survivor to slip off of the rescue seat.

#### Note

- Only one survivor, or one survivor accompanied by a RS, shall be hoisted at one time (Figure 1-14). CC recovery into the cabin of two survivors without RS assistance is extremely difficult.
- If the RS elects to be hoisted with the survivor, the RS shall wear the adjustable safety strap in the same manner as the survivor.
- If hoisting an unconscious survivor with the rescue seat, the RS shall be hoisted along with the survivor.

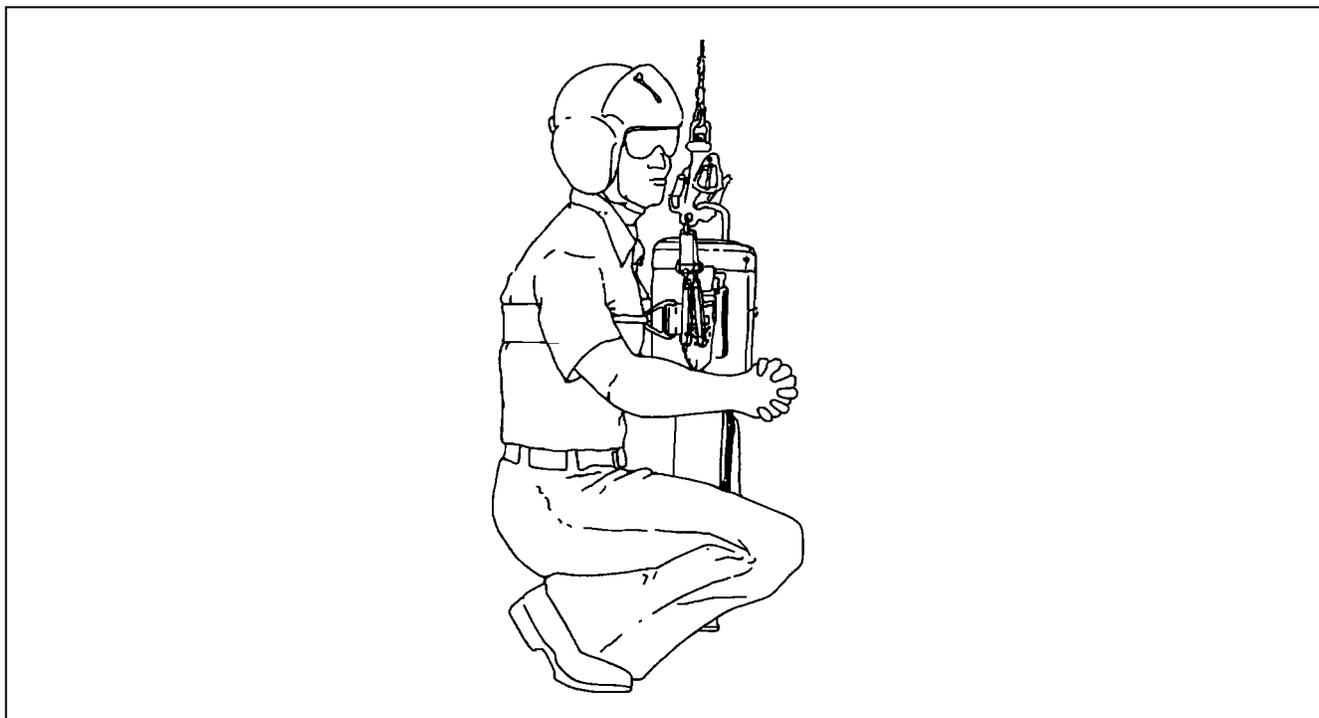


Figure 1-14. Survivor Aboard the Rescue Seat with the Safety Strap Properly Utilized

1. When the survivor is at the cabin door, the CC shall put an arm around the survivor's waist and rescue seat.
2. With the other hand in front of the survivor, guide the survivor into the aircraft cabin.
3. As the CC lowers the survivor into the aircraft, the survivor and the rescue seat are pulled inboard, causing the seat to tilt into the aircraft.
4. The CC continues to lower the seat until the edge of the support fluke is resting on the aircraft deck (Figure 1-15).



Care shall be taken not to pinch the survivor while lowering to the deck due to the fluke folding.

5. The CC then continues to lower the rescue seat until the survivor's back is on the deck of the aircraft.
6. Once the cabin door is closed, the CC shall:
  - a. Release the rescue seat safety straps and remove the survivor from the rescue seat.

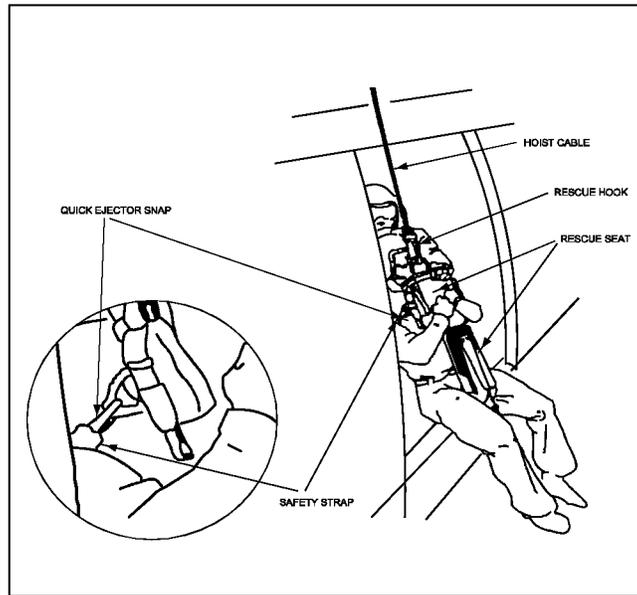


Figure 1-15. The Crew Chief Lowers the Rescue Seat Until the Edge of the Support Fluke Is Resting on the Helicopter Deck

#### 1.4.6 Rescue/Medical Evacuation Litter Procedures

The rescue/medical evacuation (MEDEVAC) litter is the only rescue device in which use of the trail line assembly is mandatory. When the rescue/MEDEVAC litter is selected as the rescue device, the following notes, warnings, and procedures shall be used.

##### Note

- The rescue (stokes litter) and the SAR MEDEVAC litter are different pieces of equipment. For the purposes of this section, they will be combined into the “Rescue/MEDEVAC litter” and any differences in procedures will be noted using the specific equipment nomenclature.
- Use of patient restraint straps with hook-and-pile tape are no longer authorized. The rescue litter (stokes) is required to have the color-coded buckle type patient restraint straps (P/N: 140). The SAR MEDEVAC litter is required to have a new frame cover that integrates the color-coded buckle type patient restraint straps (P/N: 402-2).

1. The RS communicates: “deploy rescue litter” via radio and/or hand signal (Chapter 6).
2. The CC acknowledges receipt of RS’s hand signal and communicates it to the crew.
3. The PAC commands: “Rig the rescue litter.”
4. The CC acknowledges the command and rigs the rescue/MEDEVAC litter:

**Note**

During night/IMC operations the rescue litter shall be illuminated. A chemical light strap will be attached to both the head and foot end of the rescue litter on the same side as the “V” strap. Two chemical lights will be attached to each strap.

- a. Build up the SAR MEDEVAC litter (if used).
- b. Properly connect the rescue litter sling assemblies to the rescue/MEDEVAC litter (Figure 1-16):
  - (1) Color coded: Red — head, White — foot.
- c. Connect the trail line V-strap (Figure 1-17) to the correct side of the rescue/MEDEVAC litter for the type aircraft being hoisted into (head forward for H-46/H-53, feet forward for all other helicopters).
- d. Attach the snap hooks of the trail line assembly case to anchor points on the cabin decking, nearest the cabin door (Figure 1-18).
- e. Attach the snap hook of the trail line to the trail line V-strap.
- f. Attach the weighted shot bag to the shot bag clip of the trail line.

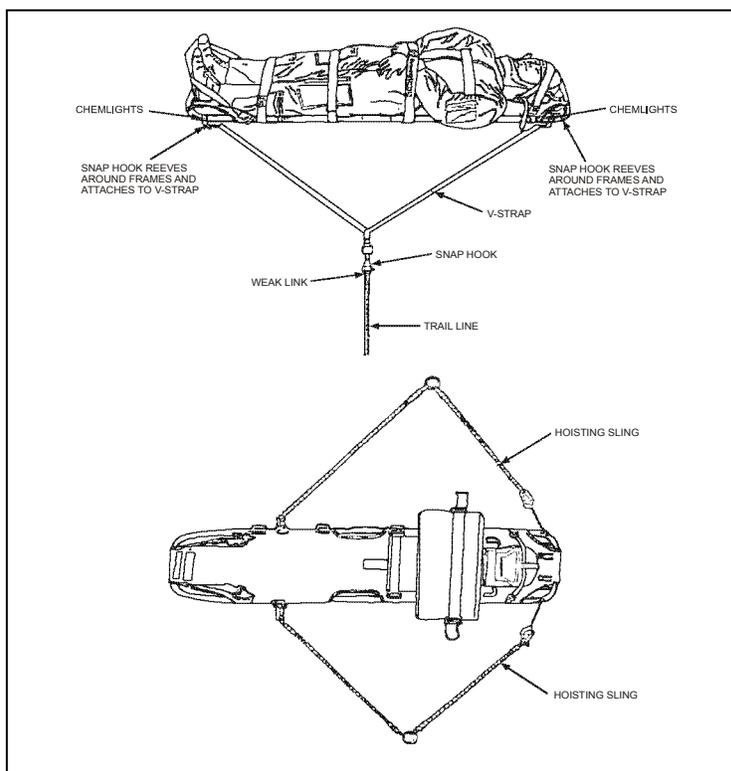


Figure 1-16. MEDEVAC Litter Connection Points for the Hoisting Slings and Trail Line Assembly

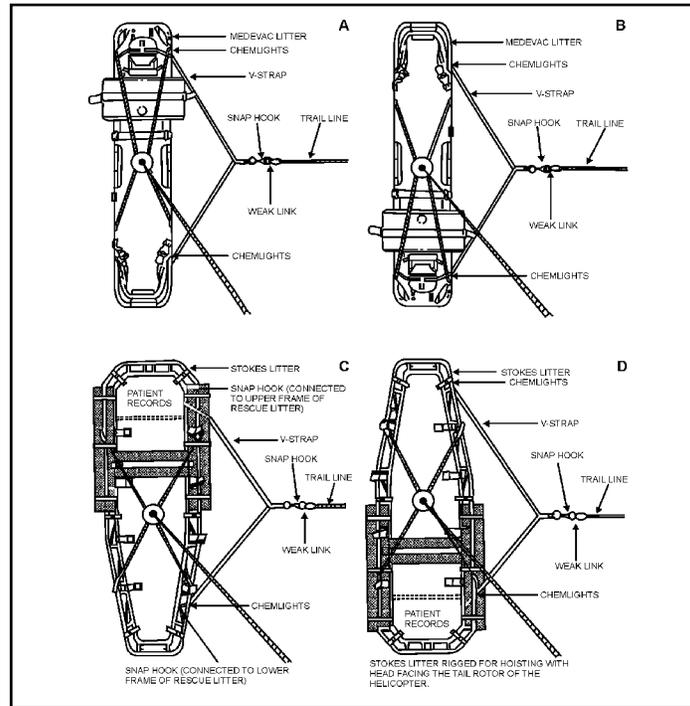


Figure 1-17. Trail Line Assembly Connection Points for the MEDEVAC and Stokes Litter

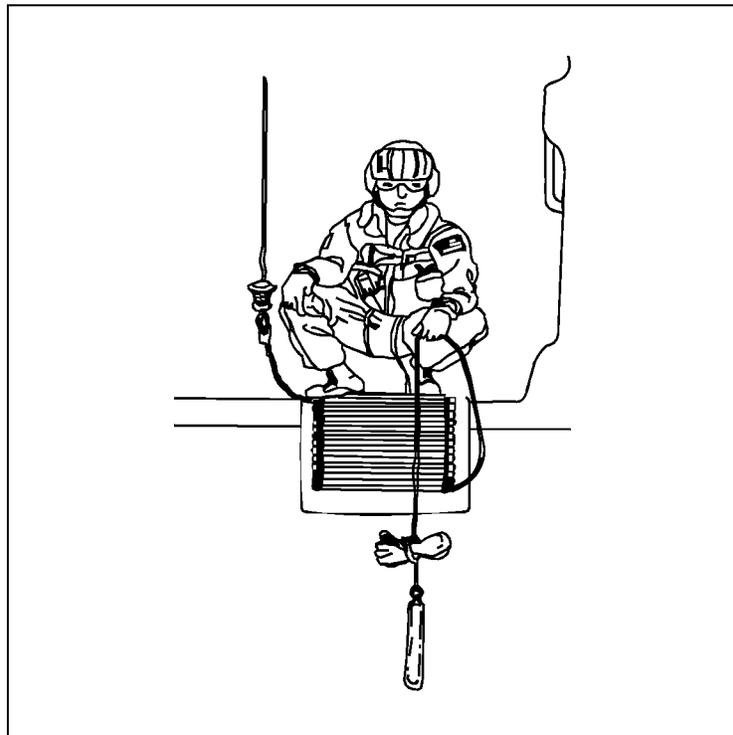


Figure 1-18. The Crew Chief Deploys the Weighted End of the Trail Line Assembly



All personnel handling the trail line during the hoisting procedure shall have gloves with leather, or other appropriately reinforced, palms.

**Note**

If needed, the CC shall tie the line-handling gloves (included in the trail line assembly) to the trail line. This can be accomplished by tying a slipknot just above the shot bag clip. Place the trail line gloves in the knot and tighten the knot to secure the gloves, so the RS/crewmember may retrieve the gloves before using the trail line.

- g. Attach the line-handling gloves to the trail line.
  - h. Ensure the patient restraint straps are properly stowed.
  - i. The CC reports: “Rescue/MEDEVAC litter rigged, standing by to deploy trail line.”
5. The PAC commands: “Deploy trail line.”
  6. The CC acknowledges the command and lowers trail line hand-over-hand to the RS.
  7. The CC observes the RS grabbing the trail line, and after receiving a “thumbs up” signal from the RS reports: “RS has the trail line, standing by to deploy rescue/MEDEVAC litter.”
  8. The PAC commands: “Deploy rescue/MEDEVAC litter.”
  9. The CC acknowledges the command and lowers the rescue/MEDEVAC litter, using standard advisory reports:



The CC shall ensure the RS does not come in physical contact with the Rescue/MEDEVAC litter until it has touched the water (trail lines are nonconductive and will not ground the litter).

10. The CC reports: “Litter is in the water.”
11. Upon observing the RS disconnecting the rescue/MEDEVAC litter from the rescue hoist, the CC reports: “Litter is clear of the rescue hook.”

**Note**

If the rescue/MEDEVAC litter was sent down without the rescue strop on the rescue hook, the CC shall connect the rescue strop to the rescue hook for rescue/MEDEVAC litter recovery.

12. The CC shall utilize verbal commands or crew hover to direct the helicopter back and left minimizing rotor wash interference with the RS/survivor. This will also facilitate visual contact with the RS/survivor. The hover position should be no closer to the RS/survivor than one rotor diameter outside the rotor wash area (Figure 1-19).
13. The RS places the survivor in the rescue/MEDEVAC litter using procedures in Chapter 3, Paragraph 3.9.3.
14. Upon receiving the hand signal from the RS, the CC shall report: "I have a move in for pick-up signal."
15. The CC shall utilize verbal commands or crew hover to direct the helicopter back on top of the RS/survivor.

**Note**

Throughout the hoisting operation, the hoist operator, using standard voice procedures or crew hover, shall direct the helicopter into maintaining a stable hover over the RS/survivor.

16. The CC lowers the rescue hook (with rescue strop attached) to the RS for hook up. The CC shall use standard voice calls to keep the PAC/crew informed of progress:
  - a. "Swimmer/survivor approaching the hook"
  - b. "Rescue litter hooked up"
  - c. "I have a hoist signal."
17. Upon receiving the "raise cable" hand signal, the CC shall raise the rescue/MEDEVAC litter to a point just on top of the surface. The rescue/MEDEVAC litter should be planed out/completely horizontal, and

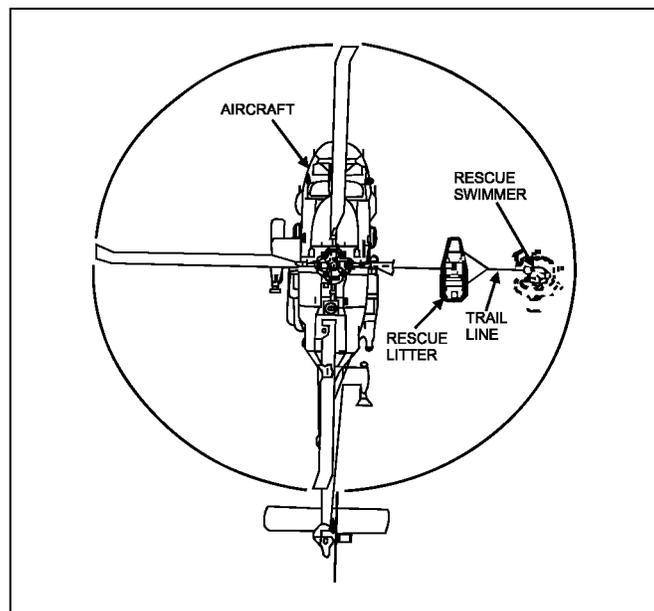


Figure 1-19. The Rescue Swimmer Uses the Trail Line to Keep the Litter Parallel to the Helicopter's Longitudinal Axis

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directly underneath the helicopter. The RS shall give the “stop hoisting” hand signal to the CC when satisfied with the position.

18. The CC reports: “swimmer performing safety check.”
19. Upon receiving a “thumbs up” signal from the RS, the CC reports: “I have hoist signal,” and hoists the rescue/MEDEVAC litter to the cabin door utilizing standard voice reports:
  - a. “Litter is clear of the water”
  - b. “Litter is halfway up”
  - c. “Litter is at cabin door.”



The direction in which the rescue/MEDEVAC litter enters the aircraft is critical. Failure to position the patient in this manner could result in further injury to the patient or damage to the aircraft.

### Note

The confined space of the H-60 cabin requires that the litter enter the cabin feet first in order to properly attend to the survivor once in the aircraft. However, the litter may enter the cabin head first if the situation warrants this to be the most appropriate method.

20. The CC and RS work together to guide the rescue/MEDEVAC litter into cabin correctly. The RS uses the trail line to turn the rescue/MEDEVAC litter, while the CC lowers and guides the rescue/MEDEVAC litter into the cabin (Figure 1-20).
21. The CC reports: “survivor aboard, recovering trail line.” The CC recovers the trail line hand-over-hand and stows it in the cabin where it will not hinder movement. The CC shall then report: “trail line secured, recovering swimmer.”
22. The RS is recovered using the standard procedures in Paragraph 1.3.7.
23. After the RS is recovered, the CC readies the cabin for forward flight and reports, “Rescue Station secured, clear for forward flight.”

## 1.5 SURVIVOR FLOTATION IN THE HELICOPTER

Once a survivor is safely on board the aircraft, the survivor’s personal flotation device should be deflated or replaced.

1. The optimum procedure is to remove or deflate the survivor’s personal flotation device and replace with a personal flotation device from the aircraft (LPP-1/A, LPU-32/P, etc.).

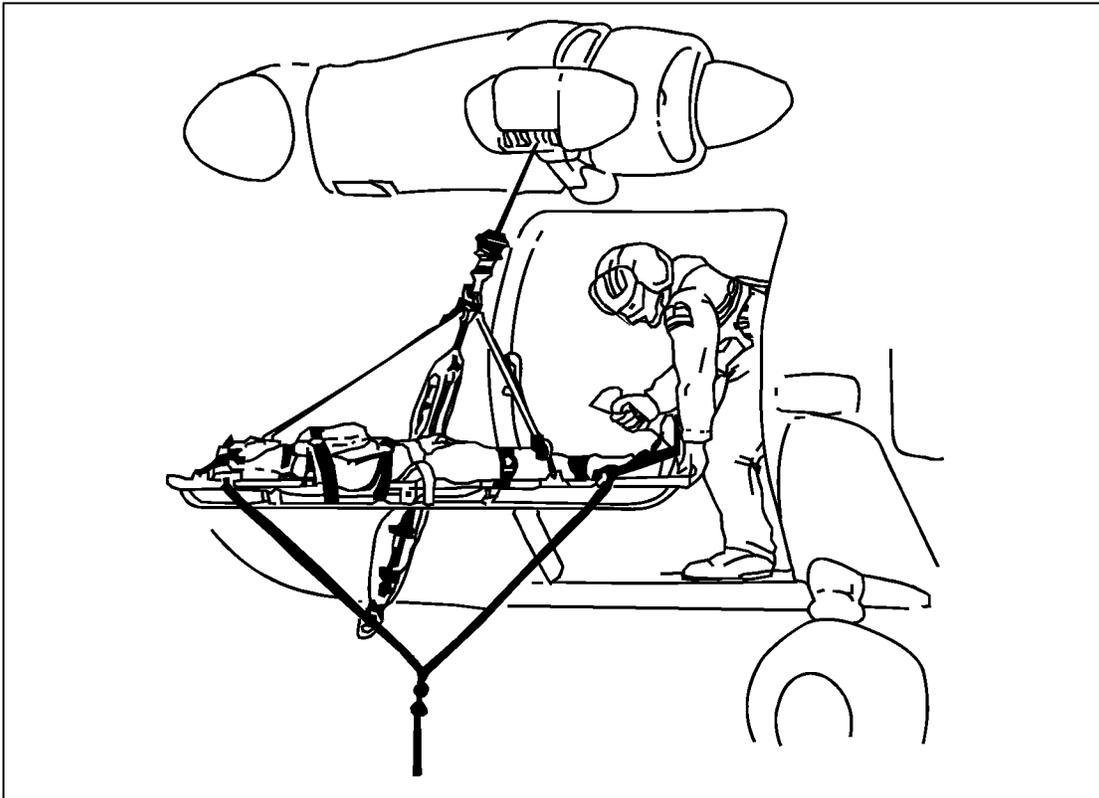


Figure 1-20. The Crew Chief, While Paying Out Hoist Cable, Guides the MEDEVAC Litter into the Helicopter

2. Should the survivor(s) injuries preclude removal of flotation or donning new flotation, the flotation should be deflated and the survivor should be placed in a rescue/MEDEVAC litter with a chest pad after medical treatment is completed.

## 1.6 HELICOPTER LIFE RAFT DEPLOYMENT

Life rafts carried by naval helicopters are designed and intended for use by the helicopter crew and passengers in case of helicopter ditching at sea. These life rafts are not specifically designed for deployment in SAR scenarios, (i.e., to be deployed by the helicopter crew, and inflate upon reaching the ocean surface).



Use applicable T/M/S NATOPS procedures, altitude, and airspeed limitations for life raft deployment scenarios.

### Note

- The recommended altitude/airspeed limitations for deploying a multiplace life raft (MPLR) (series) life raft (inflated or uninflated) is 10/10 or 15/0.
- Rescue crews should be aware that deploying rafts to survivors will reduce the number of life rafts available for helicopter crew and passengers in the event of a

## NTTP 3-50.1

mishap. SAR duty/plane guard helicopters should consider taking an additional life raft to deploy in SAR situations.

### 1.6.1 Uninflated Life Raft Deployment

1. If a RS is available, he/she should be deployed into the water first to inflate subsequently deployed life rafts and assist survivors in boarding.
2. If survivors are suspected to be military aircrew, raft may be deployed and survivors if conscious/uninjured can inflate and board raft unassisted.



The helicopter crew shall take every precaution to ensure the uninflated life raft does not strike the survivor(s) in the water.

3. Uninflated life raft deployment should be close enough to survivor(s) to ensure survivors can locate and inflate raft immediately, especially in low-visibility/night scenarios.

### 1.6.2 Inflated Life Raft Deployment

The following procedures are for MPLR series life rafts only.



- MPLR series life raft shall not under any circumstance be attached to an aircraft and deployed for immediate inflation without a weak link installed.
  - Rescue crews attempting to deploy a raft in such a fashion as to inflate upon reaching ocean surface should be thoroughly familiar with NA 13-1-6 series manuals outlining the applicable equipment and manual-inflation procedures. Improperly deployed life raft inflight can result in damaged/punctured rafts or rafts blown back into aircraft rotor system.
1. Attach one snap hook of the weak link to the equipment ring of the double rescue hook:
    - a. If the rescue hoist is in use, attach the weak link snap hook to a cabin deck ring closest to the door.
  2. Attach the free snap hook of the weak link to the snap hook located at the end of the MPLR actuation/mooring line.
  3. Ensure applicable T/M/S altitude/airspeed restrictions are met.
  4. Push (do not throw) life raft out of the cabin door, guiding it straight down with free hand.

### 1.7 HELICOPTER-TO-SHIP PERSONNEL TRANSFER

#### Note

- The RS shall be lowered to the ship if the ship’s deck crew is not familiar with personnel transfer and/or the CC is unable to visually ensure proper hookup procedures.
- Trail-line procedures may be used during personnel/equipment transfer. Refer to Paragraph 1.7.2.

The hoisting procedures are as follows:

1. When the transferee is connected to the large rescue hook and completely ready for hoisting, the RS/deck crew gives the CC the “raise cable” signal (Chapter 6).
2. Once clear of the deck, the CC shall recover the transferee IAW the procedures outlined in Paragraph 1.4, steps 10–18.

#### 1.7.1 Hoisting Vest

While the hoisting vest is not a maritime rescue device, it can be used for transfer of personnel from ship to helicopter. The CC shall ensure the vest is worn with a flotation device and that it is attached properly to the large rescue hook (Figure 1-21).

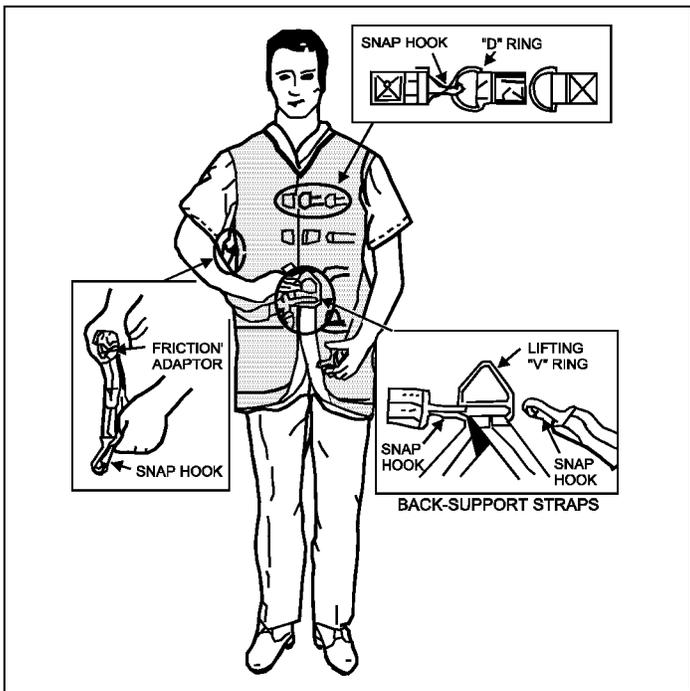


Figure 1-21. Hoisting Vest

### 1.7.2 Helicopter-to-Ship Trail-Line Hoisting Procedures

There are situations that can make the transferring of personnel by helicopter to or from surface vessels extremely hazardous due to vessel size, movement, and/or location of obstructions. Sea state and/or weather conditions may also decrease the pilot's ability to maintain a steady hover over a vessel. Use of the trail line in such situations will greatly increase the safety of ship-to-helicopter transfers while lessening the pilot workload. The vessel should be underway, preferably into the seas. The helicopter makes an approach across the vessel's deck, normally from starboard to port, dragging the weighted trail line into the grasp of deck personnel. The helicopter can then hover close aboard but clear of obstacles. The helicopter shall hover at least twice as high as its horizontal distance from the vessel. For example, if the hover is maintained so that the vessel is kept just outside of the rotor arc, the hover altitude should be equal to or greater than the rotor diameter. The following are the helicopter trail line procedures:



- Deck personnel may not be able to prevent the person who is being hoisted from entering the water if the helicopter hovers so far from the vessel that the trail line angle is less than 60°.
- Under no circumstances shall the CC allow the ships crew to tie off a line from an airborne helicopter. In the event that the trail line is intentionally or unintentionally attached to the ship, the CC shall notify the PAC and immediately accomplish T/M/S NATOPS procedures for a fouled rescue hoist cable.

#### Note

- More information on the trail line assembly can be found in Chapter 5.
- During the execution of the trail line hoist, 10° and 20° relative winds may be more favorable than the norm of 30° relative wind.
- At the discretion of the HAC, the RS may be hoisted down to the ship to assist the ship's crew with the hoisting procedure.

1. Pilot commands, "Man the rescue station for trail line hoist."

#### Note

- The trail line is attached to the equipment ring of the rescue hook for all rescue devices except the rescue/MEDEVAC litter, in which case it is attached to the rescue/MEDEVAC litter V-strap.
- A weak link has been incorporated, which will break if excessive force (approximately 450 lbs.) is applied to the trail line.

2. The CC replies: “Roger, unstrapping,” and rigs the trail line for deployment:
  - a. Attach the snap hooks of the trail line assembly case to anchor points on the cabin decking, nearest the cabin door.
  - b. Attach the snap hook of the trail line to the equipment ring of the rescue hook (Figure 1-22).
  - c. The CC shall attach the weighted shot bag to the shot bag clip of the trail line.



All personnel handling the trail line during the hoisting procedure shall have gloves with leather, or other appropriately reinforced, palms.

**Note**

If needed, the CC shall tie the line-handling gloves (included in the trail line assembly) to the trail line. This can be accomplished by tying a slipknot just above the shot bag clip. Place the trail line gloves in the knot and tighten the knot to secure the gloves, so the RS/crewmember may retrieve the gloves before using the trail line.

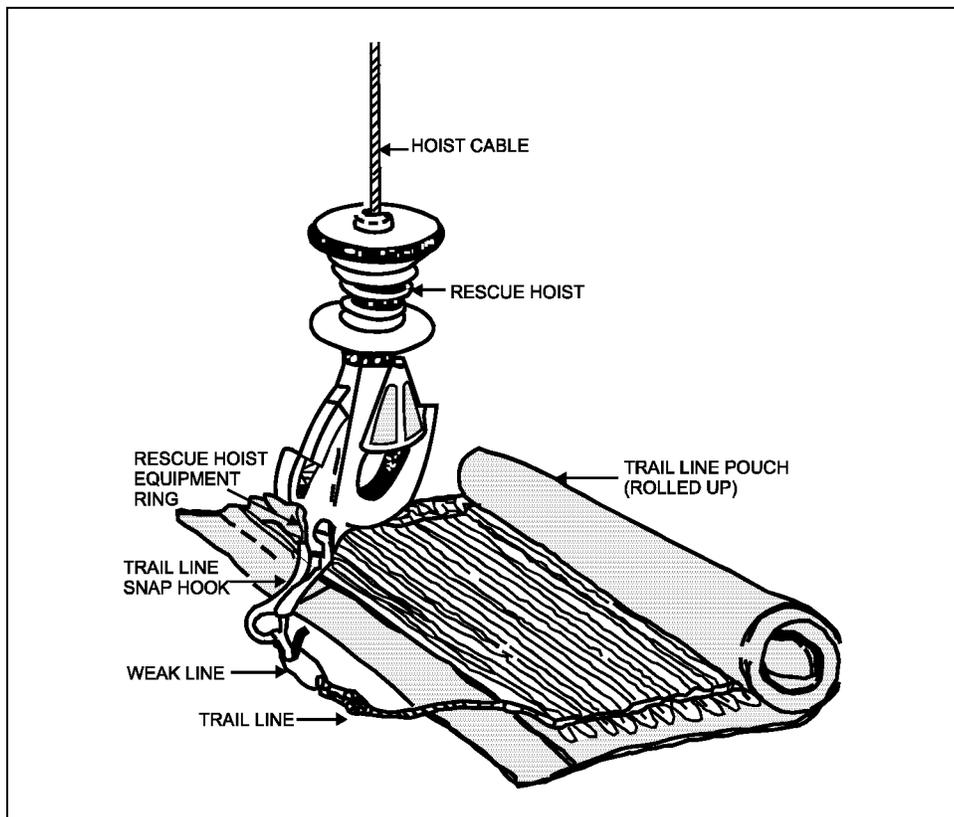


Figure 1-22. Trail Line Connected to the Equipment Ring of the Rescue Hook

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- d. Attach the line-handling gloves to the trail line.
3. The CC reports: "Trail line rigged, standing by to deploy trail line."
4. The PAC commands: "Stand by to deploy trail line."
5. The CC replies: "Standing by to deploy trail line."
6. The PAC maneuvers the helicopter to a steady hover over the ship's deck.
7. The PAC commands: "Deploy trail line."

### Note

The CC shall deploy the trail line hand-over-hand out of the aircraft.



### WARNING

Do not deploy the trail line without adequate weight attached.

8. The CC acknowledges the command, and lowers the trail line hand-over-hand (Figure 1-19), keeping the PAC informed of progress using standard voice terminology:
  - a. "Lowering trail line"
  - b. "Trail line halfway down"
  - c. "Trail line on deck"
  - d. "Deck crew has trail line."
9. The CC reports: "Standing by to deploy the (rescue device)."
10. The PAC commands: "Deploy the (rescue device)."
11. The CC acknowledges the command, and lowers the appropriate rescue device, using the standard terminology:
  - a. "Lowering (rescue device)"
  - b. "(Rescue device) halfway down"
  - c. "(Rescue Device) on deck."



Excess hoist cable on the deck of the ship is a hazard. Excess hoist cable should be deployed by the CC grabbing the hoist cable and creating a loop. This will allow the CC to meter out slack in the hoist cable by loosening the grip on the hoist cable and allowing it to slide through the hand.

12. Once the rescue device is on the ship's deck, more hoist cable shall be deployed to allow for relative movement between the vessel and the helicopter.
13. The CC shall keep the PAC advised of deck status and relative position of the aircraft. Upon receiving a "thumbs-up" signal from the deck crew, the CC shall report: "I have a raise cable signal".
14. The CC shall recover the rescue device using the following voice procedures:
  - a. "Taking tension on hoist"
  - b. "(Rescue device) tended by deck personnel"
  - c. "(Rescue device) clear of the deck"
  - d. "(Rescue device) is plumb to rescue hoist."
15. Once the rescue device is plumb (directly underneath), standard voice procedures shall be used to retrieve the rescue device into the aircraft:
  - a. "Survivor halfway up"
  - b. "Survivor at the cabin door."
16. Upon arrival of the survivor at the aircraft cabin door, the CC shall maneuver survivor/rescue device as required (see Paragraph 1.4) for transition into the aircraft cabin.



Do not detach the RS/survivor from the rescue hook until the RS/survivor are safely in the cabin of the helicopter, and the cabin door is closed (if the chosen rescue device allows the cabin door to be closed).

**Note**

If the chosen rescue device does not allow for the cabin door to be closed, the CC shall maintain physical control of the survivor at all times until the survivor is safely secured into the aircraft.

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17. When the survivor is completely inside the helicopter, the CC shall position him/herself in the cabin door, guarding against the survivor falling out:
  - a. The CC shall report: "Survivor aboard."

### **Note**

Ensure applicable T/M/S NATOPS airspeed restrictions are adhered to while the hoist cable is deployed from the aircraft rescue hoist assembly, and while the cabin door is not completely closed.

18. The CC shall pay out only enough hoist cable to allow the cabin door to be closed as far as possible without damaging the cable and/or trail line.
19. Once the cabin door is closed, the CC shall:
  - a. Remove the survivor from the rescue device.
  - b. Secure the survivor in an aircraft seat.
20. The CC opens the cabin door IAW T/M/S NATOPS procedures and reports: "Survivor (or equipment) secured in aircraft. Standing by to haul in trail line."
21. The PAC commands: "Haul in trail line."
22. The CC acknowledges the command, hauls in the trail line hand-over-hand, and stows it in the cabin where it will not hinder movement.
23. The CC closes the cabin door and reports: "After station secured, clear for forward flight."

## **1.8 EMERGENCY PROCEDURES**

### **1.8.1 Rescue Hoist Failure during a Rescue**

In the event of a rescue hoist failure during a rescue, the CC shall notify the HAC and perform rescue hoist failure procedures IAW T/M/S NATOPS manual/PCL. If determined that the rescue hoist is jammed and/or unusable, the crew shall make a decision on how to recover the RS/survivor. If personnel are attached to the rescue hoist at the time of the failure, the PAC should lower the helicopter until the personnel are in the water and can safely unhook from the rescue hoist. If lowering the personnel into the water is too hazardous to the personnel on the rescue hoist, the PAC should, at a minimum, lower the helicopter until the personnel are at a reasonable altitude should the rescue hoist cable break.

### **1.8.2 Jammed Rescue Hoist Procedures**

1. After completing the T/M/S NATOPS procedures for rescue hoist failure, the CC determines that hoist is jammed, and reports: "Rescue hoist is jammed/unusable. Standing by to perform jammed rescue hoist procedures."
2. The HAC acknowledges, and reports: "Perform jammed hoist procedures."

### Note

Due to the close proximity of the rescue hoist support to the #2 engine intake on H-60 airframes, the crewman's safety belt shall be fed over the rescue hoist support from aft to front.

3. The CC attaches the waist belt portion of the crewman's safety belt (crewman's safety belt) over the boom/support of the rescue hoist (Figure 1-23).
4. The CC attaches the shackle of the cable grip (Paragraph 5.4.1.3) to the snap hook of the crewman's safety belt strap.
5. The crewman connects the cable grip to the hoisting cable by placing the cable between the jaws of the cable grip, shackle end up.

### Note

If at all possible, the personnel on the hoist should be lowered into the water prior to attempting step 6.

6. The CC pulls the safety strap to shorten it until slack is visible in the rescue hoist cable, which relieves tension on the rescue hoist drum and brake assembly.
7. If personnel on the hoist were lowered into the water, the PAC must lift the personnel clear of the water by raising the collective flight control. The CC shall advise the PAC when personnel are well clear of the water.
8. The CC reports: "Jammed hoist procedures completed, clear for forward flight."

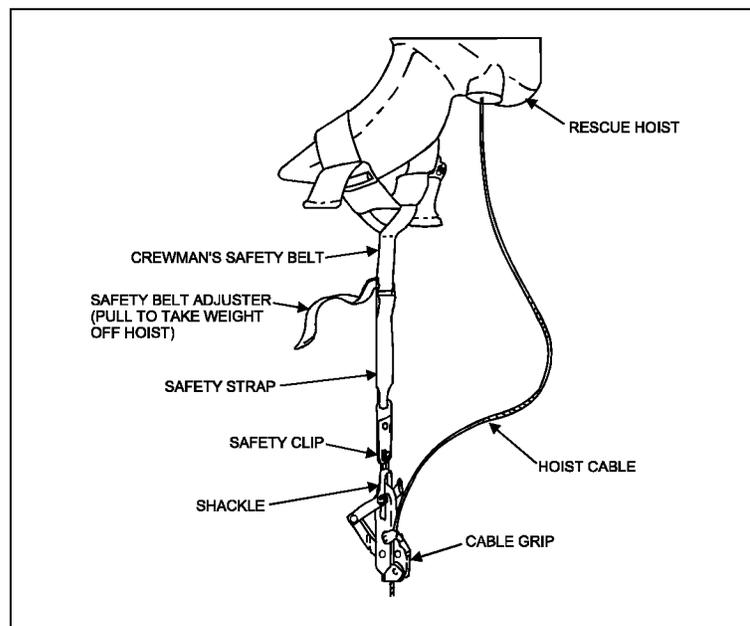


Figure 1-23. Emergency Securing of the Rescue Hoist Cable

**Note**

During transit, it is recommended that the personnel on the rescue hoist be no higher than 30 feet AGL, and airspeed be no faster than safe single engine airspeed.

9. The PAC acknowledges, and keeps the helicopter within T/M/S NATOPS limitations for maneuvering with a rescue hoist load.
10. The CC shall keep the PAC apprised of the personnel's condition, oscillations, and height above the water.

**1.8.3 Severed Rescue Hoist Cable**

In the event that the rescue hook has been either intentionally or unintentionally severed from the hoist cable, it may be possible to fix the problem in flight, and continue to use the rescue hoist. In this instance, the hoist quick splice plate (Paragraph 1.8.4) may be rigged.

**Note**

Normally, a Lucas Western or Breeze Eastern Rescue Hoist will be rendered unusable if the rescue hoist cable is severed utilizing the squib (emergency separation device), due to the squib's location in the hoist assembly.

1. If time permits, and continued use of the rescue hoist is desired/needed, the rescue hoist cable should be cut with the pneumatic rescue hand tool or manual rescue hand tool, using the following procedures.

**Note**

Failure to properly prepare the rescue hoist cable prior to cutting will result in the hoist cable unraveling when it is cut.

- a. A strong type of tape, such as ordnance tape, should be tightly wrapped around desired area to be cut.
- b. Cut the rescue hoist cable directly below the tightly wound tape.

**Note**

If unable to prepare the hoist cable prior to cutting, the cable might be salvaged by taping it tightly, either where the unraveling stops, or as high up towards the rescue hoist as possible. Once taped, let out a small amount of hoist cable and retape. Continue with this procedure until the unraveling stops. Once good rescue hoist cable is found, use the above procedures at a point 1–2 feet above that spot.

**1.8.4 Rigging the Hoist Quick Splice Plate**

The hoist quick splice plate assembly (Figure 1-24) affords the CC the opportunity to fit a severed rescue hoist cable with a new rescue hook. The following notes, warnings, and procedures apply:

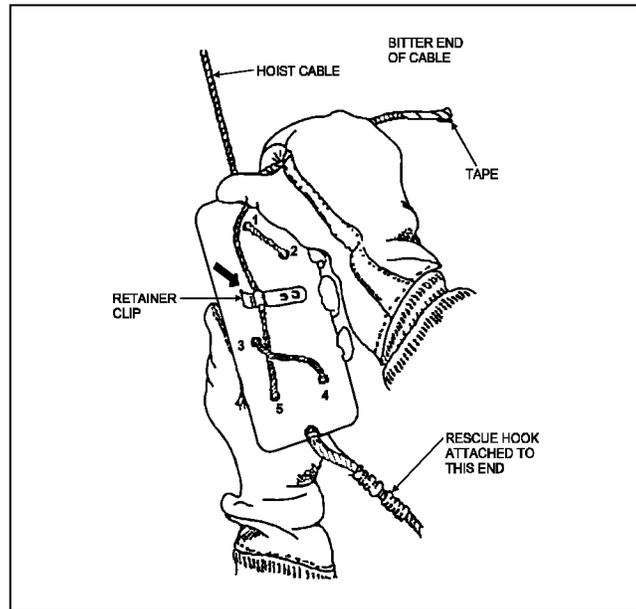


Figure 1-24. The Crew Chief Places the Bitter End of the Rescue Hoist Cable Under the Retainer Clip



Failure to rig the cable through the hoist quick splice plate properly will result in the cable slipping out of the quick splice when tension is applied.

**Note**

A properly rigged quick splice will not affect (degrade) rescue hoist weight limitations.

The hoist quick splice plate may not engage the rescue hoist upper limit switch. Separation of the quick splice/rescue hoist cable is possible when the hoist quick splice plate assembly reaches the upper limit switch of the rescue hoist. The rescue hoist shall not be fully raised when using the hoist quick splice plate.

1. Lace the hoist cable through the numbered holes starting with “1.”
2. Place the bitter end of the cable back under itself between holes “3” and “4.”
3. Once correctly routed through all five holes, the bitter end of the cable shall be routed under the retainer clip (Figure 1-24).
4. The quick splice is ready to use, and normal hoisting may be resumed.

## 1.9 AVIATION SAR READINESS CONDITIONS

The following readiness conditions are to be utilized for search and rescue.

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### **1.9.1 SAR Condition I**

The aircraft shall be spotted for immediate launch. It shall be headed into the relative wind with rotor blades spread, starting equipment plugged in, and a landing signal enlisted (LSE), starting crewman, plane captain, and required plane handlers standing by. Unless otherwise directed, at least four tie-downs shall be attached to the aircraft. The flight crew shall be ready for launch in all respects, with all personal equipment attached and adjusted as in flight. When the air officer passes the word to stand by to launch the Condition I helicopter(s), engines shall be started without further instructions; however, rotor engagement and launch shall be positively controlled by the tower.

### **1.9.2 SAR Condition II**

The same conditions apply as for Condition I, except that flight crews shall stand by in the ready rooms or in other such suitable locations.

### **1.9.3 SAR Condition III**

Main rotor blades may be folded and the aircraft need not be in position for immediate launch; however, it must be parked so as to allow direct access to a suitable launch spot. A tow bar shall be attached to the aircraft and a specific LSE, tractor driver, handling crew, and starting crewman shall be designated and assigned to each helicopter. These personnel must be thoroughly briefed so that when the order is given to prepare launch, the aircraft can be safely and expeditiously moved into position and readied for launch. Flight crews should be briefed for the launch and be standing by at a designated location.

### **1.9.4 SAR Condition IV**

This is similar to Condition III except that minor maintenance may be performed on the aircraft if no delay in launch is involved.

## CHAPTER 2

# Surface Vessel Search and Rescue Procedures

### 2.1 BASIC FACTORS

This chapter is intended as a guide for surface vessel rescue procedures and describes current standard procedures. Selected SAR references are contained in the bibliography at the back of this manual, and rescue equipment stock numbers are contained in Appendix D.

#### 2.1.1 Means of Rescue

Normally, the SAR helicopter is the primary SRU when available, with the surface ship or rescue boat as secondary. However, there are situations in which the rescue boat is the best choice as the SRU. An example would be for recovery of an uncooperative/combatative survivor (Chapter 3, Paragraph 3.6.4) or a large number of survivors. Whatever the situation, the goal is to use the fastest and most effective rescue platform for the given situation. Whichever platform is the primary SRU, the other(s) should remain outside the immediate area of the survivors so as not to hamper the rescue operation, and remain ready to assist if needed.

#### 2.1.2 Surface Ship Search and Rescue Responsibility

Although most helicopters are configured for all-weather flight operations, the surface ship by either deck or rescue boat should be prepared to assume the primary rescue role day or night. The Naval Search and Rescue (SAR) Standardization Program OPNAVINST 3130.6 (series) outlines SAR certification, qualifications, and training requirements for surface ships, surface RSs, rescue boat crews, and J-bar davit rescue crews.

#### 2.1.3 Decision to Launch Rescue Boat or Conduct Shipboard Recovery

The decision to launch the rescue boat or conduct the SAR operation by shipboard J-bar davit should be governed by the existing sea state, the emergency situation at hand, and the ship's tasking.

### 2.2 SHIP'S ORGANIZATION

The Standard Organization and Regulations of the U.S. Navy OPNAVINST 3120.32 (series) provides the basic requirements for Man Overboard, Rescue and Assistance, Rescue of Survivors, and Aircraft Crash and Rescue Bills that shall be used to organize the ship's company for recovery of personnel at sea. Figure 2-1 lists the required J-bar davit recovery crew. Figure 2-2 contains the manning requirements for the rescue boat crew. The minimum crew size for a small boat is 3 personnel, but while conducting a SAR mission boats need to have a minimum crew of four personnel (three-person crew plus a rescue swimmer in order to safely recover a littered survivor).

<b>REQUIRED J-BAR DAVIT RECOVERY DETAIL</b>	
<b>QUANTITY</b>	<b>DESCRIPTION</b>
1	Safety Officer
1	Rig Captain
1	Rigger
6 (minimum)	In-Haul Line
8 (minimum)	Double Hoist
2	Forward/Aft Vangs
2	Swimmer Tending Line
1	Temporary Life Line
1	Rescue Swimmer
1	Corpsman
1	Shark Watch
4	Stretcher Bearers

<b>REQUIRED LPD-17 SAN ANTONIO CLASS RECOVERY DETAIL</b>	
<b>QUANTITY</b>	<b>DESCRIPTION</b>
1	Safety Officer
1	Rig Captain
1	Rigger
6 (minimum)	In-Haul Line
8 (minimum)	Double Hoist
2	Swimmer Tending Line/Temporary Life Line
1	Rescue Swimmer
1	Corpsman
1	Shark Watch
4	Stretcher Bearers
1	Crane Operator
1	Engineer(machinery room)

Figure 2-1. Required J-Bar Davit/LPD-17 San Antonio Class Recovery Crew

<b>MWB, LCPL MINIMUM CREW REQUIRMENTS (see notes)</b>	
<u>NUMBER OF PERSONNEL</u>	<u>DUTY</u>
1	Boat Officer
1	Coxswain
1	Engineer/Sternhook
1	Bowhook
1	Rescue Swimmer
<b>RHIB MINIMUM CREW REQUIRMENTS (see notes)</b>	
<u>NUMBER OF PERSONNEL</u>	<u>DUTY</u>
1	Boat Officer/Bowhook
1	Coxswain
1	Engineer/Sternhook
1	Rescue Swimmer
<b>NOTES:</b>	
<ol style="list-style-type: none"> <li>1. Every member of the boat crew shall be at least a second class swimmer.</li> <li>2. The above minimum crew requirements may be added to by the commanding officer.</li> <li>3. Any or all members of the boat crew qualified to carry a pistol may do so at the discretion of the commanding officer.</li> </ol>	

Figure 2-2. Minimum Required Boat Crew

**2.2.1 Rescue Swimmer**

Experience has shown that a properly trained RS has been the difference between success and failure in many past rescues. Per OPNAVINST 3120.32 (series), surface ships shall have a minimum of two fully qualified and equipped surface RSs. MCM, MHC, and PC class ships require only one fully qualified surface RS. Equipment allowance lists shall provide for a minimum of two fully equipped RS’s per surface ship IAW Appendix D of this manual.

**Note**

The surface RS and recovery crews shall meet and maintain all training and qualification requirements of the Naval SAR Standardization Program OPNAVINST 3130.6 (series) and the Surface Force Training Manual COMNAVSURFORINST 3502.1 (series). The surface RS shall be afforded opportunities to maintain a high state of physical fitness, conduct proficiency training, and practice rescue procedures as required by the OPNAVINST 3130.6 (series).

**2.3 SHIPBOARD PREPARATIONS FOR SAR OPERATIONS**

A successful SAR mission requires the need for proper preparation. Ensure the following are checked:

1. Required personnel are assigned rescue positions on the Watch Quarter and Station Bill IAW this manual and OPNAVINST 3120.32 series.
2. The necessary publications listed in the Bibliography are on board, and immediately available to the officer of the deck, tactical action officer and SAR officer.
3. All rescue equipment listed in Chapter 5 is on board and in good operating order.

**Note**

Appendix B of this manual, “Check-off List — OSC,” should be used for search planning.

**2.3.1 Assessing the Rescue Situation**

Assessing the rescue situation begins with the initial notification and tasking of a SAR mission, and continues until survivor recovery on board the ship. The following factors shall be continuously assessed, and any changes/updates shall be communicated to all personnel involved in the SAR mission:

1. Number/type of survivor(s):
  - a. Military or civilian.
2. Location of survivors, their relation to, and distance from each other and the SRU.
3. Visible, and/or known injuries of the survivor(s):
  - a. MOI
  - b. Conscious/unconscious
  - c. Visible bleeding
  - d. Environmental injuries
  - e. Broken bones.
4. Flotation devices inflated/not inflated/survivors face down in water.
5. Parachute entanglement problem/presence of a ballooned parachute.
6. Day or night/sea state/wind direction/water temperature.
7. Cooperative/uncooperative/combative survivor(s).
8. Fuel in the water.
9. Debris littering scene and its relation to the survivor.
10. Presence of sea predators.
11. Feasibility of attempting multiple/single rescue.
12. Rescue order established according to apparent injuries. The survivor with the worst injuries shall be rescued first.
13. RS deployment options.
14. Other available rescue assets to assist.

### 2.3.2 Cold-Water Operations

When operations are conducted in cold-water conditions, sickbay shall be prepared to treat survivors and rescue personnel for hypothermia, and should have sufficient equipment ready whenever cold-water operations are scheduled.

### 2.3.3 Plane Guard Assignment

When a ship is assigned to plane guard, ensure that:

1. A radio check is conducted with the aircraft parent ship on the assigned frequencies. During flight operations, a listening watch shall be maintained at all times on this frequency to allow early detection of possible aircraft difficulties.
2. All planes are routinely tracked when within radar range (emission control [EMCON] permitting).
3. All required equipment listed in Chapter 5 is inventoried once a watch.
4. A rescue boat is ready for immediate lowering.
5. Qualified rescue personnel are suited up, ready, and mustered for each watch.
6. Aircraft data from NAVAIR 00-80R-14 Appendix D and E (i.e., plane exits, pilot breathing apparatus type, pilot securing fittings, parachute fittings, and flotation gear, etc.) shall be available, and reviewed by the surface RS.
7. When flight operations and/or SAR procedures are being conducted, do not permit trash to be thrown over the side.

#### Note

Signal lights should be manned IAW the standard procedure listed in the ship's Man Overboard Bill. However, if weather conditions permit, a number of portable lights of reasonable power should be available on the forecastle when night plane guard duty is assumed. Following an aircraft crash in the vicinity of the carrier, the rescue ship can expect to find a number of floating lights and flares thrown over by carrier personnel, which can complicate locating the aircrew from among the debris, floating lights, and whitecaps. The more illumination that can be put on the crash area, the better the chances of locating personnel. If working with a helicopter at night, do not direct searchlights at the helicopter to avoid causing night blindness or blooming of the aircrew's night vision devices. NVGs (AN/PVS-7A or equivalent) should be available to lookouts and boat crews and may prove more useful than searchlights. Military aircrew survivors will have various types of radios, strobe lights, hand-held flares, flashlights, and whistles attached to their survival vest. Rescue ships should use a portable megaphone or IMC to communicate to the survivors in the water. The rescue ship can request survivors in the water to identify themselves by flare, noise, etc. Once survivor(s) have been sighted, the ship or rescue boat should communicate with the survivors via voice, radio, or 1 MC. This will assist in identifying the number and location of other survivors as well as reassuring the sighted personnel in the water that they are in sight.

## **2.4 SEARCH**

### **2.4.1 Search Planning**

Factors involved in search planning are covered in detail in the United States National Search and Rescue Supplement to the International Aeronautical and Maritime Search and Rescue Manual. Minimum formal training requirements for Command Information Center (CIC) watch standers who are assigned search planning responsibilities are outlined in the OPNAVINST 3130.6 (series) and COMNAVSURFORINST 3502.1 (series).

### **2.4.2 Lookouts**

Although it is important that all personnel not directly involved in the SAR mission remain clear of the scene, there is a distinct advantage in having a number of personnel topside to act as lookouts. When searching for a man overboard, or when isolating survivors from debris at an aircraft crash site, the more eyes the better. Number and location of assigned lookouts during a SAR mission must be judged upon prevailing conditions. Lookouts should be assigned a specific sector in relation to the ship's heading to conduct visual searches with the naked eye, binoculars, or NVGs. Lookouts should scan their assigned area with slow vertical and/or horizontal sweeps as visual detection of survivors or debris will normally occur in the scanners' peripheral vision and not directly. Upon sighting a signaling device, a survivor, or wreckage debris, the lookout should immediately communicate the approximate distance and position relative to the ship's heading. Lookouts should be fully briefed, and relieved every 60 minutes to avoid eye fatigue.

### **2.4.3 Daylight Search**

During daylight, lookouts shall search for light reflection from mirrors, bright orange smoke, airborne flares, black or bright-colored life rafts, and emergency radio beacons transmitting on 121.5, 243.0, or 282.8 MHz.

### **2.4.4 Night Search**

If available, lookouts should be equipped with NVGs. Bright searchlights and NVGs should not be used in the same lookout sector of the ship, as the direct or indirect light from searchlights will render NVGs ineffective. In peacetime, if the rescue ships have been under other-than-normal lighting measures, it is prudent to switch on normal navigation lights following an aircraft crash in order to minimize the danger of collision with other ships and SRUs during rescue operations.

## **2.5 MARKING OF THE SURVIVOR'S POSITION**

Accurate deployment of a signal/marker helps to avoid losing sight of the survivor, and provides a reference to the SRU approaching the survivor.



- If fuel is evident or suspected in the water, smoke flares should not be used because they may ignite the fuel.
- When deploying a marking device, use caution not to strike the survivor.
- Avoid dropping smoke flares directly upwind of the survivor as the fumes are caustic, and may injure the survivor.

**Note**

Detailed information on survivor position marking devices can be found in Chapter 5 of this manual, and in the NAVAIR 11-15-7 (series).

**2.6 AIR/SURFACE COORDINATION**

The OSC makes the final decision of which SRU will make the recovery. However, the helicopter is normally the primary means of rescue during all-weather day and night operations. The most notable exceptions are when the weather is below acceptable limits (300 feet or lower overcast, and 1-mile visibility), or the survivor is known or suspected to be uncooperative or combative. It is highly recommended that all shipboard rescue personnel familiarize themselves with the helicopter procedures found in Chapter 1 of this manual. There are three important points that should be noted:

**Note**

ATP 10 provides general rules to be followed by rescue ships and helicopters when both are on station.

1. A ship or rescue boat assisting a helicopter, or assuming primary SRU/recovery responsibilities, should be aware of the potential hazard that exists from a parachute in the water in or around the rescue scene. A parachute in the immediate area of the survivor, whether deployed or not, represents a potential hazard to a helicopter, a rescue boat, as well as the survivor and RS. The helicopter will normally stand off 30 yards or more from a parachute in the water and deploy the RS, requiring the aviation RS to swim to the survivor. The assisting ship/rescue boat shall make every attempt to communicate the presence of a parachute to all SAR assets involved.
2. When performing as the primary SAR asset, the helicopter's aft rotating anticollision light shall remain on (the helicopter's forward rotating anticollision light may be turned off during night operations to aid the pilots and aircrew using NVGs). If it is necessary for the helicopter to yield to an alternate means of rescue, the helicopter's rotating anticollision lights will be turned off.
3. During any SAR mission the ship shall be prepared to give a magnetic bearing and range from the rescue helicopter to datum, or datum LAT/LONG as requested.

**2.6.1 Ship/Rescue Boat Standby Position**

If a helicopter is affecting the rescue, ships should stay clear of the rescue scene so as not to blanket the wind, or otherwise interfere with the helicopter.

**2.6.2 Helicopter Turnover of the Rescue to the Ship or Rescue Boat**

In the event the parachute cannot be removed from the pilot, and a rescue boat is available, the helicopter shall abandon the rescue pickup attempt, turn off the anticollision lights, and move away from the pickup area if possible. In the event the survivor is found to be uncooperative or combative, the RS or HAC may determine that the survivor would pose a significant risk to the helicopter and crew once aboard, the helicopter may request recovery by the rescue boat or ship.

**2.7 RESCUE BOAT OPERATIONS**

The rescue boat is required to maintain positive communications with the bridge team at all times while conducting a SAR mission. Additionally, the officer of the deck or another member of the bridge team needs to cover the helicopter's coordination/controlling frequency in order to relay any required directions to the rescue

## NTTP 3-50.1

boat. The rescue boat shall remain close, but stay clear of the rescue scene until the helicopter's aft rotating anti-collision light is turned off and/or the helicopter communicates the intention to pass the rescue responsibility to the rescue boat. At this signal, the rescue boat will assume responsibility for the rescue. Unless the coxswain can see the rescue scene, the boat should be maneuvered IAW radio communications and/or the helicopter being relieved procedures.

### 2.7.1 Approaching Survivor

Prior to approaching the survivor in the water, the rescue boat crew must determine if the helicopter is successfully affecting the rescue.



Inhalation of composite fibers resulting from aircraft fires and/or aircraft material damage may be harmful to the RS and rescue crew. If smoke is present, the RS shall be deployed upwind, and will approach the aircraft/debris in a manner as to avoid any smoke. Refer to Chapter 7, Paragraph 7.1.2, for more information on procedures and personal protective equipment (PPE).

#### Note

- The rescue boat shall never pass between the helicopter and the survivor to avoid the possibility of becoming fouled in the helicopter hoisting cable when it is determined that the helicopter has yielded the rescue to the rescue boat (Figure 2-3).
- The rigid hull inflatable boat (RHIB) approach should be made directly at the survivor, keeping the survivor on the port bow until the RS is deployed. The RHIB is then brought alongside of the survivor. The outdrive unit allows the RHIB to be backed either to port or to starboard.
- Coxswains shall use extreme caution while using the RHIB as a rescue vehicle, keeping the RS, survivor, and parachutes away from the outdrive unit.
- The motor whaleboat (MWB)/landing craft personnel light (LCPL) approach should be made directly to the survivor, keeping the survivor on the port bow. The cast of the boat's screw in reverse will set the boat alongside the survivor if the approach is made with the survivor on the port bow.

### 2.7.2 Surface Rescue Swimmer Deployment From Rescue Boat (Day or Night)

1. Deploy from the starboard bow (Figure 2-4):
  - a. The coxswain puts engine in neutral.
  - b. The RS prepares for deployment.

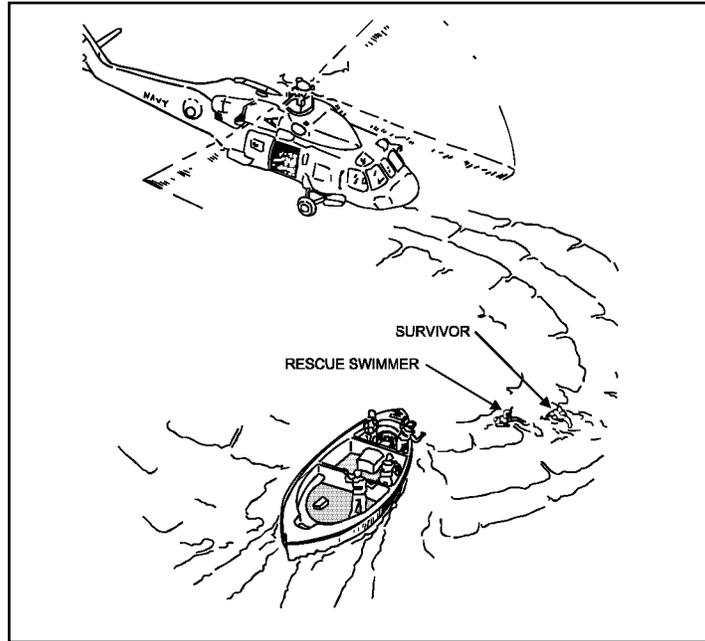


Figure 2-3. Rescue Boat Prepares to Take over Rescue

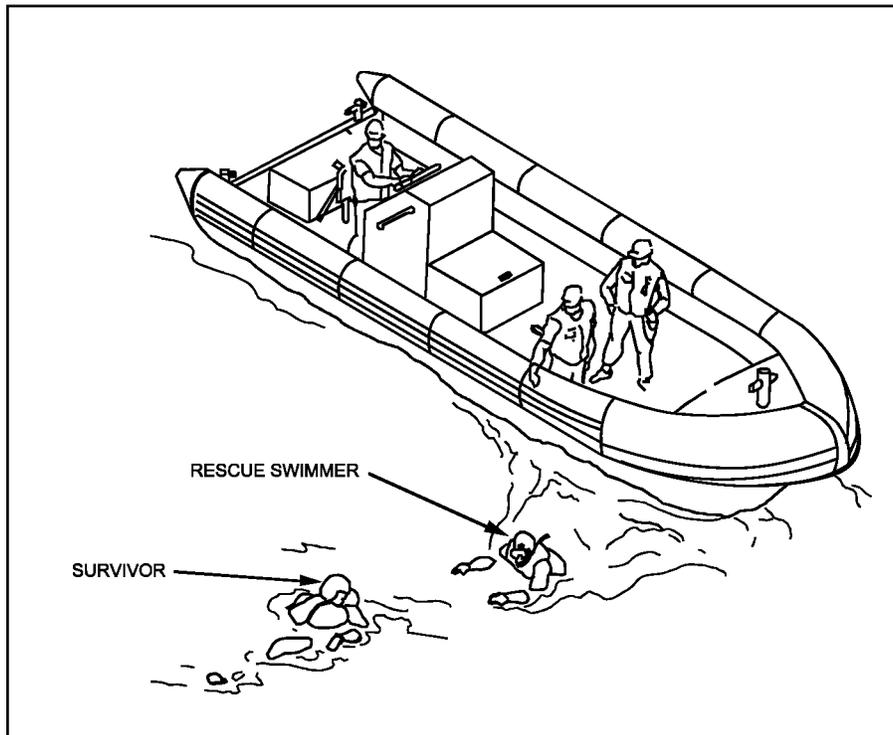


Figure 2-4. Rescue Swimmer Deployment from Rescue Boat

## NTTP 3-50.1

2. After receiving permission from the boat officer/coxswain, prepare to deploy the RS:
  - a. The RS will sit on starboard bow and prepare for deployment.
  - b. A boat crewmember holds the RS by the harness maintaining control of the RS.
  - c. Both the RS and crewmember scan the water for debris.
  - d. A boat crewmember gives the RS one tap on the shoulder.
  - e. The RS will roll to the left and come to rest on both hands, fins in water.
  - f. The boat crewmember will give the RS three taps on shoulder, and release the RS's harness.
  - g. The RS pushes away from the boat, enters the water, clears mask, and gives the applicable day or night signal: "I am all right."

### Note

- During night operations, the RS shall be illuminated with a chemical light before entering the water.
- The RS tending line is optional when deploying from the rescue boat. The coxswain shall remain in close proximity and maintain visual contact of the RS in the water.

### 2.7.3 Rescue Boat Approach to Parachute

Personnel in the water with a parachute attached shall be approached with caution. The survivor may be entangled in the parachute shroud lines that may be submerged and not visible to the boat crew. In making an approach on the parachute, ensure boat speed is slow enough to avoid the rescue boat contacting the parachute.



A parachute attached or entangled to the aviator poses a significant threat to the survivor, RS, and rescue boat. A partially or fully submerged parachute may become inflated or "ballooned" by water current, which can easily provide enough force to pull the survivor and RS underwater and capsize a rescue boat entangled in the shroud lines. In all cases in which it is deemed appropriate for the rescue boat crew to hook a parachute, every attempt should be made to hook the parachute at the apex. Pulling the parachute into the rescue boat by the apex will effectively collapse the parachute and make it much easier to haul in. This method of collapsing the parachute is particularly important if a survivor is being dragged underwater by the parachute.

#### 2.7.3.1 Streamed Parachute

A streamed parachute (Figure 2-5) should be first hooked and pulled into the rescue boat. This will ensure the parachute does not sink and pull the survivor down. RS should then be immediately deployed. If the survivor is entangled in the shroud lines, RS shall assist in removing survivor from the harness. Refer to Chapter 3, Paragraph 3.5.1 for RS procedures for a survivor entangled in shroud lines. Shroud lines shall only be cut as necessary as it has

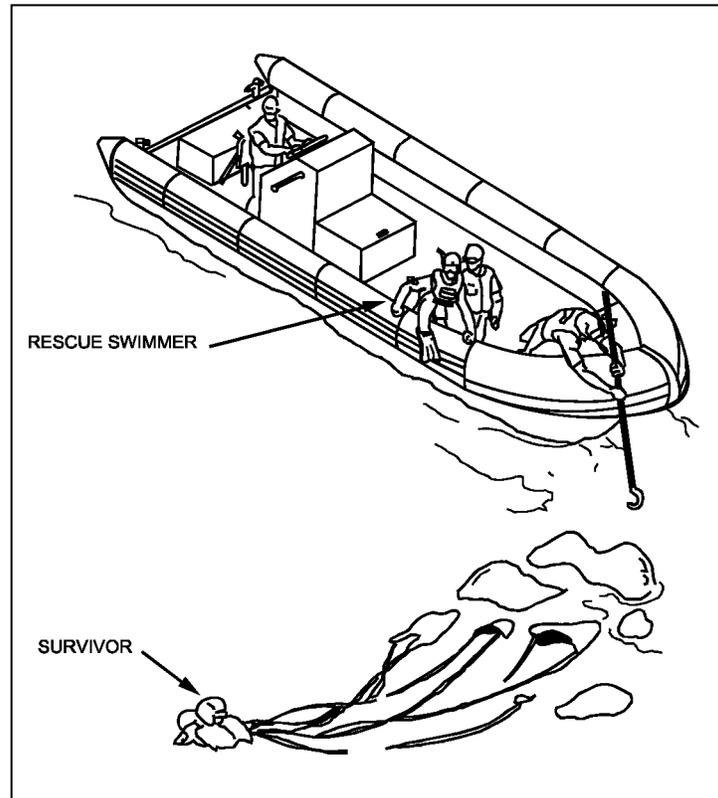


Figure 2-5. Approach to Survivor with Parachute

been found that when shroud lines are cut in the water, it usually adds to the disentanglement problem. Therefore, shroud lines should be lifted clear, pulled away from the survivor, and only cut as a last resort.

#### Note

RS shall be deployed regardless if survivor is entangled with parachute.

#### 2.7.3.2 Sinking Parachute

If the parachute sinks below the surface before the boat hook snags it, the RS shall deploy immediately and attach a tending line to the survivor (Figure 2-6) if possible, or the boat crew may attempt to snag the survivor's harness with the boat hook, keeping the survivor at the surface of the water as long as possible. The RS shall start parachute-disentanglement procedures IAW Chapter 3 of this manual.

#### 2.7.3.3 Ballooned Parachute

The RS approaches the survivor IAW Chapter 3, Paragraph 3.5.2 of this manual (Figure 2-7). Upon clearing the survivor from the parachute and pulling the survivor 6 to 8 feet from the parachute, the RS shall give a thumbs-up signal to the rescue boat. The survivor and RS should then be recovered into the boat.

#### 2.7.4 Rescue Priority

The rescue boat shall attempt to rescue the most severely injured survivor first. (If the aviation RS is left by his aircraft, he is automatically reverted to survivor status.)

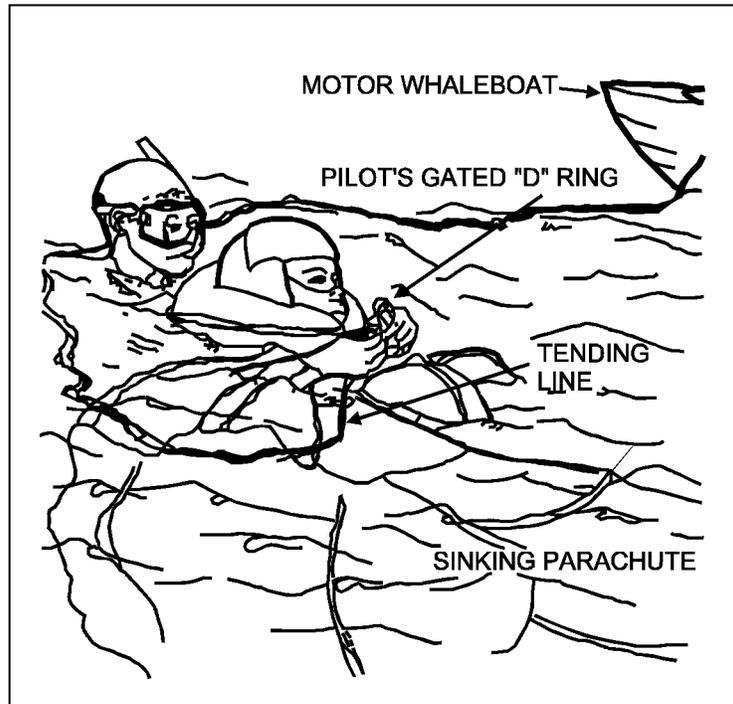


Figure 2-6. Attaching Tending Line to Survivor with Sinking Parachute

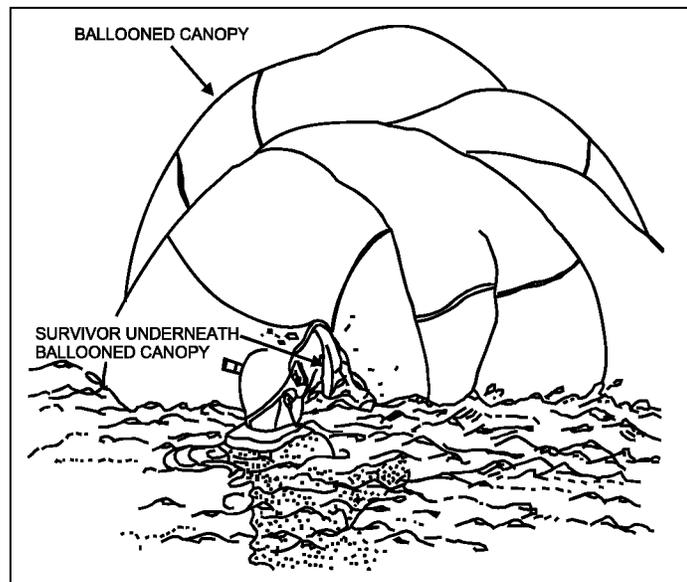


Figure 2-7. Rescue Swimmer Approach to Survivor with Ballooned Parachute

### 2.7.5 Rescue Boat Recovery Position

All MWB recoveries of personnel from the water shall be attempted with the survivor facing inboard of the port forward gunwale of motor whaleboat (Figure 2-8), and outboard of the port bow tube on RHIB (Figure 2-9). The RS shall assist the survivor from the water.



To prevent back injury to the survivor, the survivor is pulled into the motor whaleboat facing inboard towards the gunwale (Figure 2-8) or pulled into the RHIB facing outboard of the tube (Figure 2-9).

### 2.7.6 First Aid

First aid for the survivors begins onboard the rescue boat. Once onboard the rescue boat, the survivors' injuries should be investigated, and first aid administered as necessary until the survivors are turned over to medical department personnel on the ship. Chapter 7 of this manual outlines first-aid procedures for rescue personnel.

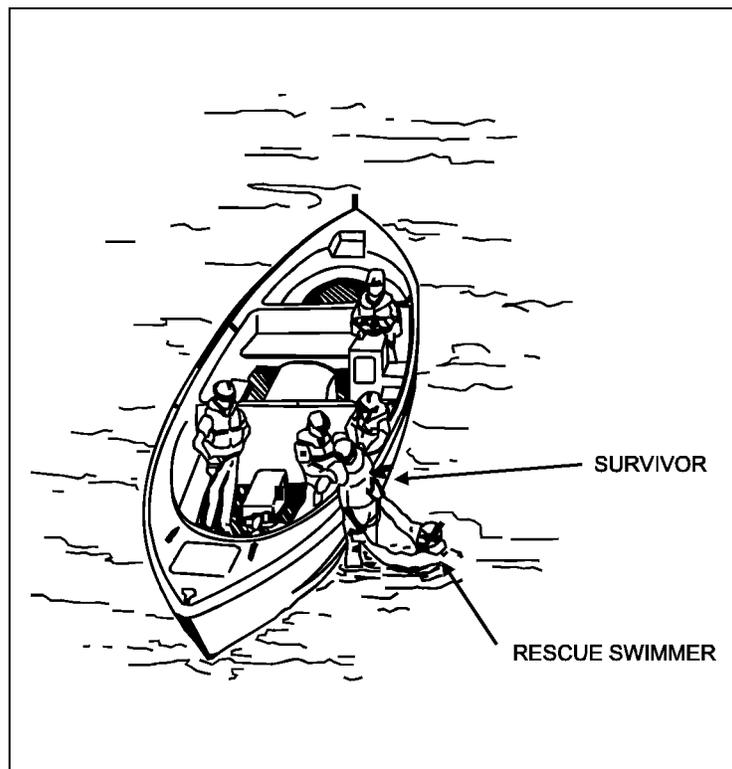


Figure 2-8. Motor Whaleboat Pickup of Survivor and Rescue Swimmer

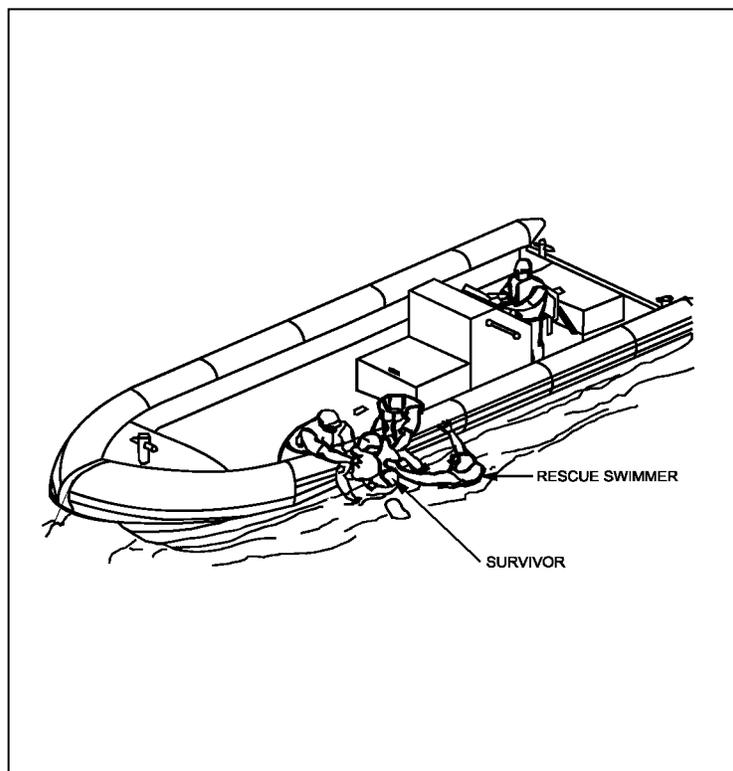


Figure 2-9. Rigid Hull Inflatable Boat Pickup of Rescue Swimmer and Survivor

### 2.7.7 Rescue/Medical Evacuation Litter Procedures for Rescue Boat

1. The rescue/MEDEVAC litter shall be onboard the rescue boat and readied for deployment to the RS upon request. The RS has the option of securing the survivor into the litter while the boat crew has positive control of the rescue/MEDEVAC litter alongside the rescue boat, or the RS may request the boat crew relinquish control of the rescue/MEDEVAC litter after the RS has positive control. When the rescue/MEDEVAC litter is selected as the recovery device, the following procedures are to be followed

**Note**

The rescue (stokes litter) and SAR MEDEVAC litters are different pieces of equipment. For the purpose of the manual, they will be combined into the “rescue/MEDEVAC litter,” and any differences in procedures will be noted using the specific equipment nomenclature.

**Note**

Use of patient restraint straps with hook-and-pile tape are no longer authorized. The rescue litter (stokes) is required to have the color-coded buckle type patient restraint straps (P/N: 140). The SAR MEDEVAC litter is required to have a new frame cover that integrates the color-coded buckle type patient restraint straps (P/N: 402-2).

- a. The RS shall give the verbal/hand signal (Chapter 6) when it is determined that the rescue/MEDEVAC litter is required.

- b. The boat officer/coxswain, upon receiving the signal, shall ensure that the rescue/MEDEVAC litter is readied for the rescue. The coxswain shall maneuver the rescue boat alongside the RS, keeping the RS and the survivor on the port bow. The coxswain must ensure not to drift past RS and survivor while making approach. Once maneuvered, the coxswain shall put the rescue boat in neutral.
- c. During night operations, the rescue/MEDEVAC litter shall be illuminated by chemical lights.
- d. All patient restraint straps shall be on the RS's right as the RS faces the open side of the rescue/MEDEVAC litter. Four of the five patient restraint straps shall be faked; the remaining strap has the chest pad attached. The hoisting sling and trail line assembly are not attached to the rescue/MEDEVAC litter for rescue boat operations, but should be available in the boat.
- e. The boat officer/coxswain shall direct the boat crew to place the rescue/MEDEVAC litter in the water, back against the gunwale/tube, with head of the rescue/MEDEVAC litter out of the water maintaining positive control of the rescue/MEDEVAC litter.

**Note**

After the RS has control of the rescue litter, positive control by the boat crew should only be attempted if sea state permits.

- f. The RS shall secure the survivor into the rescue/MEDEVAC litter IAW Chapter 3, Paragraph 3.9.3.
  - g. Once the survivor is secured in the rescue/MEDEVAC litter, and the final check has been completed, the RS will give the hand signal indicating "ready for pickup."
  - h. The boat officer/coxswain shall direct the boat crew to retrieve the survivor aboard the rescue boat. The RS shall be retrieved after the survivor is on board.
2. If the RS requests the boat crew relinquish control of the rescue/MEDEVAC litter, procedures are as follows:
- a. The boat officer/coxswain, upon receiving the signal "deploy rescue litter," shall ensure that the rescue/MEDEVAC litter is readied for the rescue. The boat coxswain shall maneuver the rescue boat alongside the RS, keeping the RS and the survivor on the port bow. The coxswain shall ensure the rescue boat is in neutral, once the rescue boat is positioned correctly.
  - b. The boat officer/coxswain shall direct the boat crew to place the rescue/MEDEVAC litter in the water, back against the gunwale/tube, with head of the rescue/MEDEVAC litter out of the water maintaining positive control of the rescue/MEDEVAC litter (Figure 2-10).
  - c. The RS guides the survivor into the rescue/MEDEVAC litter and attaches the top (gray) restraint strap over the survivor's chest.
  - d. The RS shall inform the boat crew that he has positive control of the rescue/MEDEVAC litter.
  - e. Boat crew shall relinquish control of the rescue/MEDEVAC litter to the RS.
  - f. The coxswain shall back down the rescue boat and stand by.
  - g. The RS shall secure the survivor into the rescue/MEDEVAC litter IAW Chapter 3, Paragraph 3.9.3.

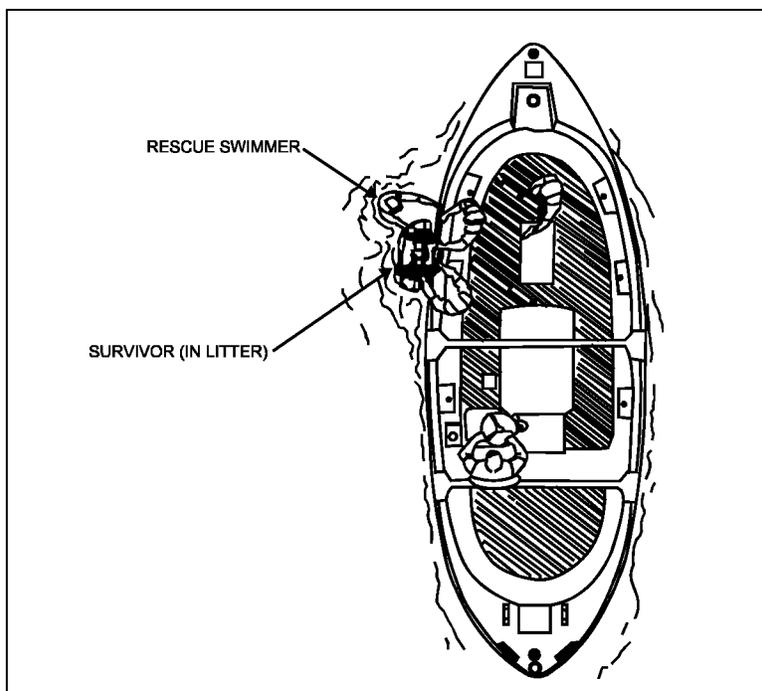


Figure 2-10. Rescue Litter Procedure for Rescue Boat

- h. After the RS’s final check and receiving the hand signal from the RS indicating “ready for pickup,” the coxswain will approach the RS keeping him on the portside and the boat officer/coxswain shall direct the boat crew to retrieve the survivor aboard the rescue boat. The RS will be retrieved after the survivor is on board.



- Spinal immobilization is essential to ejection egress aircrew. Aircrew who eject from aircraft must be presumed to have spinal injuries. Utilizing the rescue/MEDEVAC litter for recovery is highly recommended to help prevent a potentially life threatening, or permanent neurological injury. In conjunction with use of the rescue/MEDEVAC litter, total spinal immobilization, including cervical collar, should be applied at the earliest convenience.
- An unconscious survivor automatically communicates an injury to the head, neck, and spine. The RS should be deployed and rescue/MEDEVAC litter utilized on an unconscious survivor.
- Use of the rescue/MEDEVAC litter is the RS’s first choice of recovery devices for an unconscious survivor. The only exceptions would be that the survivor has immediate life-threatening injuries (no breathing, severe arterial bleeding), or extraordinary environmental conditions exist that prohibit rescue/MEDEVAC litter use.

- Lack of respiratory function (breathing) is a life-threatening condition. If the survivor is not breathing, the RS shall give two rescue breaths to the survivor, safely complete all applicable disentanglement/recovery procedures, and signal the SRU for immediate recovery of the survivor. After the completion of applicable disentanglement/recovery procedures, the RS shall continue rescue breathing for the survivor every 15–20 seconds until recovery by the SRU.

**2.8 SHIPBOARD J-BAR DAVIT RECOVERY**

The recovery of survivor(s) directly by a ship shall be accomplished when:

1. Helicopter assets are not available.
2. The sea state precludes lowering of a rescue boat.
3. The ship’s commanding officer determines that the ship can accomplish the rescue more expeditiously than any other means available.

**Note**

Because of its sail area the ship will drift faster than a survivor in the water, and thus will drift toward the survivor.

- a. The conning officer will drive the ship so as to place the survivor on the leeward side.
- b. When directed from the bridge, every attempt should be made by the deck recovery detail to deploy life rings and international orange heaving lines to gain contact or positive control of the survivor. If the distance is too great, a RS shall be lowered into the water (Figure 2-11).

**2.8.1 International Orange Latex Balls**

Although the Standard Ship’s Organization Manual specifies that at least six heaving lines made up with international orange vinyl latex balls shall be available for use, experience indicates this number to be a bare minimum. One of the critical points in a “ship alongside” recovery is in getting a line to the survivor. At this stage in the recovery, survivors are often in great danger of drifting under or across the bow. Under strong wind conditions, more than six heaving lines may be deployed before successful contact with the survivors is made. Aircraft crashes involving helicopters may have up to 25 survivors, fixed-wing aircraft may have more depending on the type of aircraft and troop/passengers compliment. Refer to the SAR TACAID for specific T/M/S crew compliment. There is also the possibility that two or more survivors may or may not be in close proximity to each other.

**2.8.2 Rescue Swimmer Deployment From J-Bar Davit (Day or Night)**



For ease of illustration purposes, Figure 2-15 DOES NOT accurately display the correct manning requirements for J-bar davit deployment/recovery procedures. Correct manning requirements can be found in Figure 2-1.

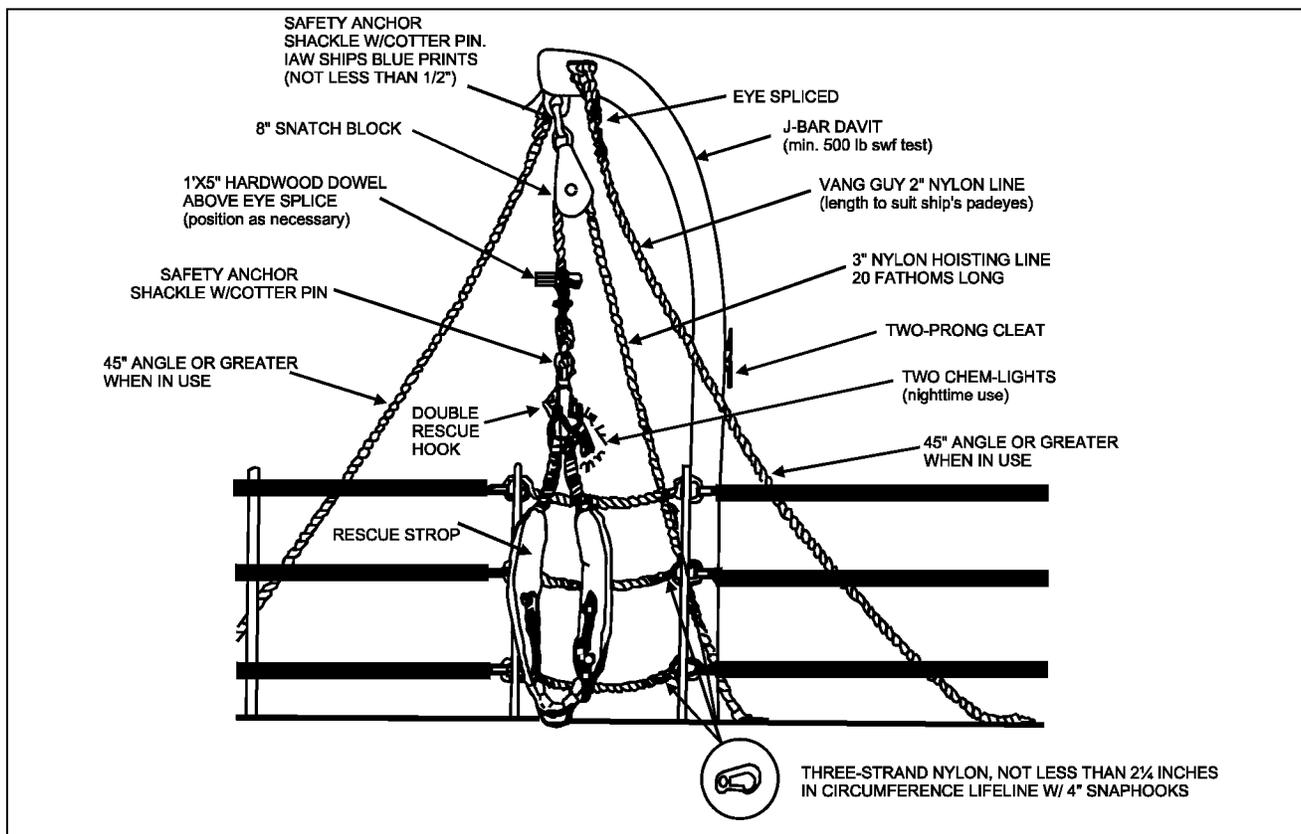


Figure 2-11. Forecastle J-Bar Davit Rig

**Note**

During night operations the RS, rescue strop, and rescue hook shall all be illuminated by chemical lights (Figure 2-12).

1. Don rescue strop. Upon lowering the temporary lifelines (required for RS safety), the rigger shall take positive control of the RS by the harness, disconnect one side of the rescue strop from the large rescue hook, bring the rescue strop around the RS, high under the arms, and reattach the strop into the large rescue hook (Figure 2-13).
2. Connect RS's tending line. The rigger brings tending line under the strop and attaches it into the friction V-ring on RS's left harness riser (Figure 2-14).



For ease of illustration purposes, Figure 2-18 DOES NOT accurately display the correct manning requirements for J-bar davit rescue/MEDVAC litter deployment/recovery procedures. Correct manning requirements can be found in Figure 2-1.

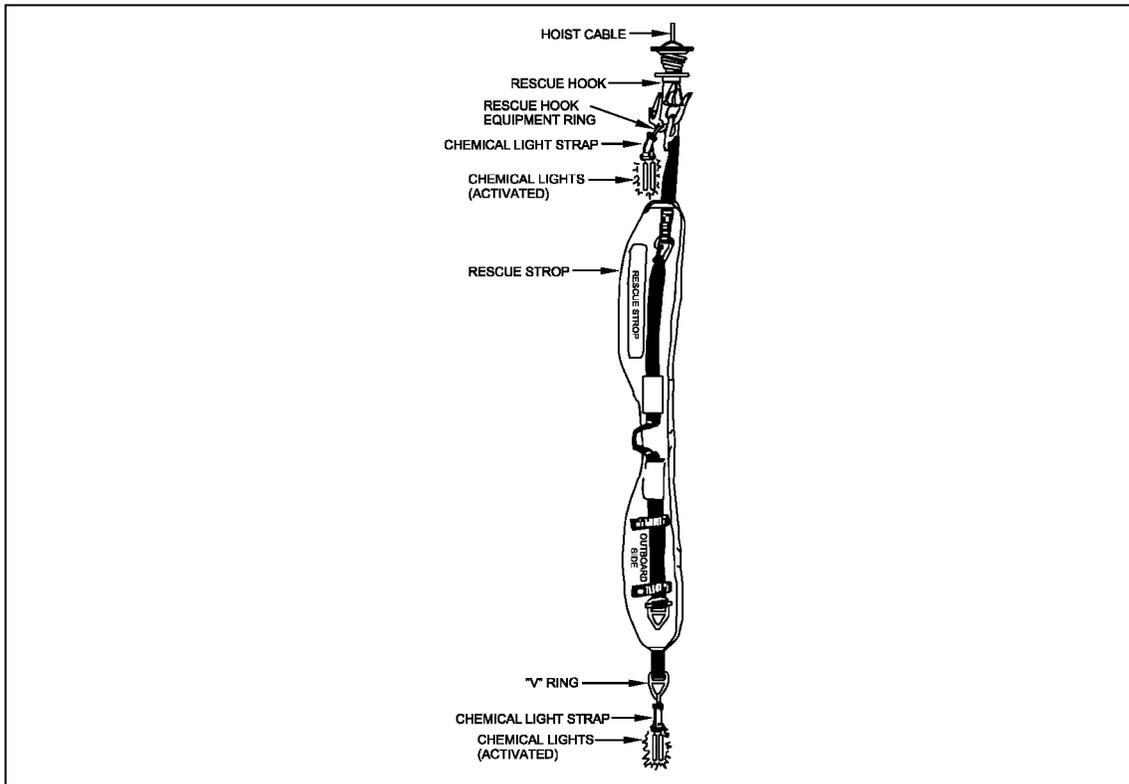


Figure 2-12. Rescue Strop with Chemical Lights Attached

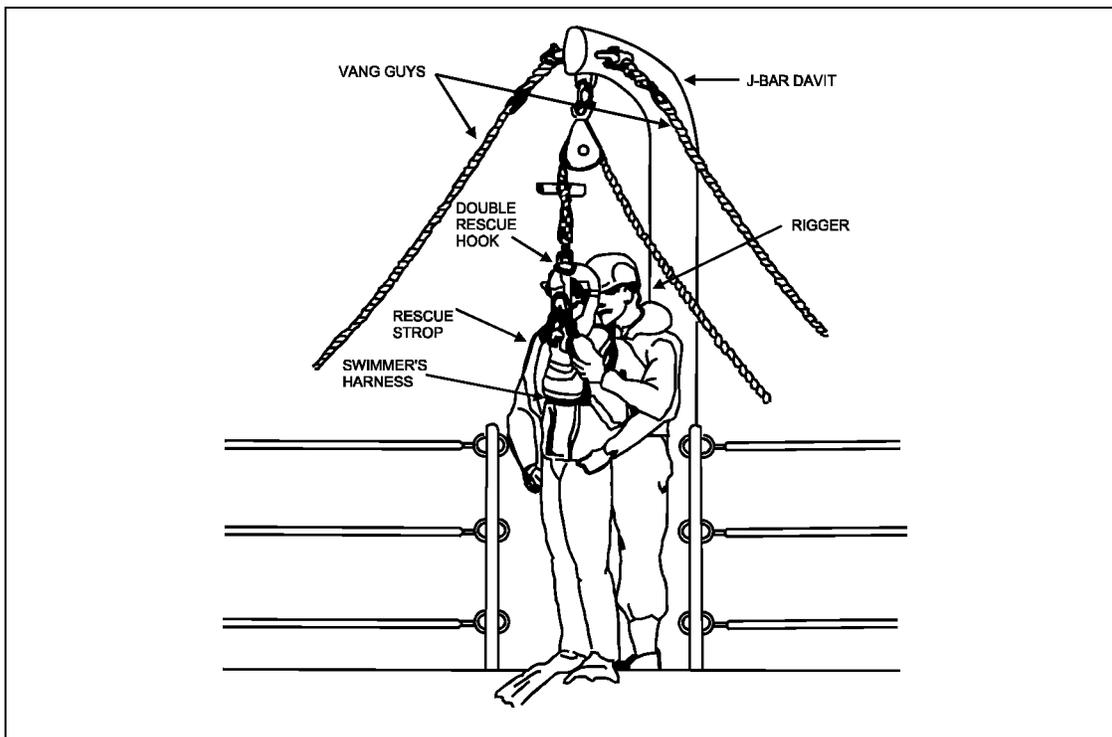


Figure 2-13. Rescue Strop Attaching Procedure

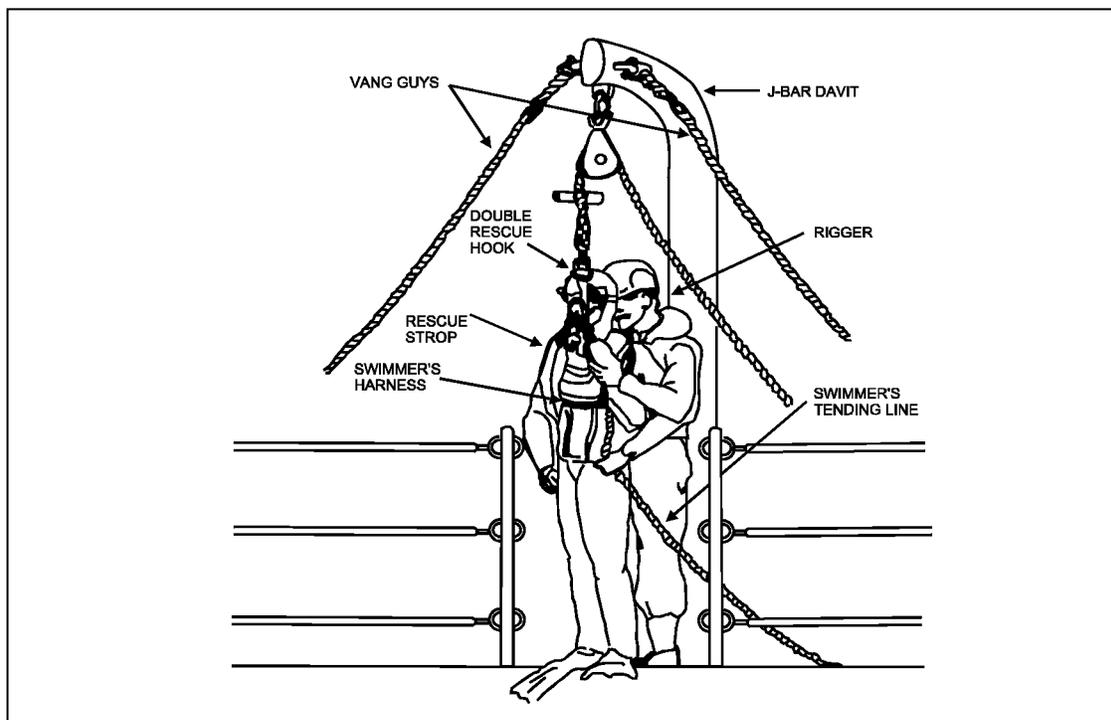


Figure 2-14. Tending Line Attaching Procedure

**Note**

The RS's tending line shall be attached for all J-bar davit deployments. The rig captain should ensure the tending line is positioned so that the person(s) tending it have visual contact with the RS. A position well forward or aft allows the tending line to be properly tended and minimizes the risk of entanglement.

3. The rig captain has RS assume ready position either sitting or standing at deck's edge and has the rigger conduct a final check of the RS's gear.
4. The rig captain/rigger shall ensure that an "S" turn is on the cleat prior to lowering RS.
5. Upon permission from the commanding officer, the rig captain will lower the RS into the water (Figure 2-15).
6. The rigger shall assist the RS as the rig captain directs the use of the fore/aft vang lines to slew the J-bar davit over the side.



**WARNING**

- The RS shall never jump over the side or get out of the rescue strop until rescue strop is in the water.
- The RS shall be prepared to fend off the ship with hands and feet, if the ship is rolling due to rough seas.

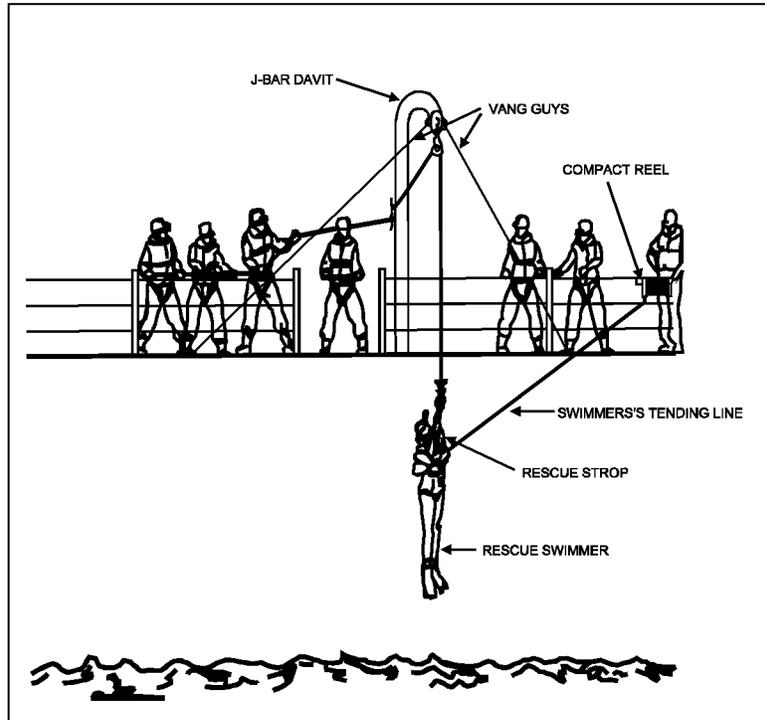


Figure 2-15. Rescue Swimmer Lowering Procedures — Forecastle

7. The RS swims clear of rescue strop upon water entry, clears mask, and gives hand signal, “I am all right” (Chapter 6).
8. The rig captain retrieves the hoisting line and prepares to deploy any rescue device the RS requires to complete the rescue evolution. The rescue strop, when deployed to the RS in the water, will be attached to the hook by one side only.

**Note**

The RS’s tending line may be used to assist the RS back to the ship if requested by the RS using the hand signal “heave around, tending line” (Chapter 6).

**2.8.3 J-Bar Davit Recovery Procedures**

**2.8.3.1 Location**

There are some risks in bringing a survivor alongside anywhere but at the forecastle. However, due to the construction of PC-class ships, mid-ships J-bar davits will be used for shipboard recoveries.



- From the ship’s deck it may not be possible to determine if the survivor is still attached to the deployed parachute. The parachute may be submerged vertically below the survivor and could be sucked into the fire pumps, main induction, or ship’s screws.

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- Spinal immobilization is essential to ejection egress aircrew. Aircrew who eject from aircraft must be presumed to have spinal injuries. Utilizing the rescue/MEDEVAC litter for recovery is highly recommended to help prevent a potentially life-threatening or permanent neurological injury. In conjunction with use of the rescue/MEDEVAC litter, total spinal immobilization, including cervical collar, should be applied at the earliest convenience.
- An unconscious survivor automatically communicates an injury to the head, neck, and spine. The RS should be deployed and rescue/MEDEVAC litter utilized on an unconscious survivor.
- Use of the rescue/MEDEVAC litter is the RS's first choice of recovery devices for an unconscious survivor. The only exceptions would be that the survivor has immediate life-threatening injuries (no breathing, severe arterial bleeding), or extraordinary environmental conditions exist that prohibit rescue/MEDEVAC litter use.
- Do not use a cargo net or ladder for recovery of injured survivors aboard ship. The primary recovery method is hoisting the boat to deck edge, or to boat deck with survivors on board. The secondary method is J-bar davit and rescue strop/litter.
- Lack of respiratory function (breathing) is a life-threatening condition. If the survivor is not breathing, the RS shall give two rescue breaths to the survivor, safely complete all applicable disentanglement/recovery procedures, and signal the SRU for immediate recovery of the survivor. After the completion of applicable disentanglement/recovery procedures, the RS shall continue rescue breathing for the survivor every 15–20 seconds until recovery by the SRU.
- Inhalation of composite fibers resulting from aircraft fires and/or aircraft material damage may be harmful to the RS and rescue crew. If smoke is present, the RS shall be deployed upwind, and will approach the aircraft/debris in a manner as to avoid any smoke. Refer to Chapter 7, Paragraph 7.1.2 for more information.

### 2.8.3.2 Hoisting

Most surface ships have J-bar davits that are designated for rescue. Use of a properly rigged J-bar davit is the only approved way of hoisting a RS and/or survivor out of the water. The hoisting line shall be a minimum of 20 fathoms in length with the rescue hook attached. Using a rescue strop attached to the rescue hook simplifies hoisting personnel from the water (Figure 2-11). Some of the advantages are:



The large hook is the only portion of the rescue hook to be used for hoisting personnel. The small hook of the rescue hook shall never be used to hoist personnel.

#### **Note**

The rig captain shall ensure that the rescue hook is equipped with a rescue device that has inherent flotation (rescue strop, rescue litter, rescue seat, rescue basket) and chemical lights, if needed (night/IMC).

1. All Navy and Marine Corps aircrews are familiar with the rescue strop and are trained in its use.
2. The rescue strop floats on the surface.
3. The rescue strop can be tossed a short distance, which is an advantage over nets, rescue/MEDEVAC litters, and seats that must be brought directly over or under the survivor.

### 2.8.3.3 Survivor Recovery Procedures (J-Bar Davit)

Selection of the rescue devices will generally be made prior to rescue RS deployment and is determined primarily by the physical conditions of the survivor(s) and the single or multiple status of the rescue. In situations where two or more survivors are to be lifted simultaneously, the weight-bearing limitations and amount of line handlers must be considered. It is essential that the RS and J-bar davit deck crew be knowledgeable in the applications and utilization of all rescue devices, hand signals, and voice procedures. Chapter 3 details procedures for the use of the various devices for the RS, and Chapter 6 contains RS hand signals for devices.

### 2.8.3.4 Rescue Strop Recovery

The rescue strop is a quick and easy way to deploy/recover the RS or recover a survivor during a shipboard operation. The rescue strop is designed to accommodate one person and is deployed to the RS in the water with one side attached into the large rescue hook, and one side free. The RS may also be recovered by attaching the Lifting V-Ring of the RS's harness directly into the large rescue hook. The following procedures shall be used when recovery by the rescue strop:

1. RS performs approach and rescue procedures IAW Chapter 3.
2. RS signals "ready for pickup" (Chapter 6) for the rescue strop to be lowered.
3. As the RS tows the survivor to the ship (Figure 2-16), the rescue hook is lowered with a rescue strop attached.
4. The RS places the survivor in the rescue strop IAW Chapter 3, Paragraph 3.9.2 and gives the "raise cable" hand signal (Chapter 6), indicating ready for pick up. If the survivor is military, a lifting V-Ring or gated D-Ring will be attached to the aircrew survival harness. The RS may attach the lifting ring directly to the rescue hook for hoisting.
5. The rig captain conducts hoisting using standard voice procedures as the RS maintains control of the survivor until the survivor is clear of the water.
6. Upon arrival of the survivor at deck level, the rig captain will have the davit swung in using the fore/aft vang lines, and have the rigger grab the rescue strop to assist the survivor on deck.
7. Upon completion of survivor recovery, the rig captain lowers the rescue hook with the rescue strop attached to retrieve the RS (Figure 2-17).



If the ship is taking rolls to the degree that the survivor will contact the side of the ship during hoisting, the RS should accompany the survivor to help prevent further injury during hoisting.

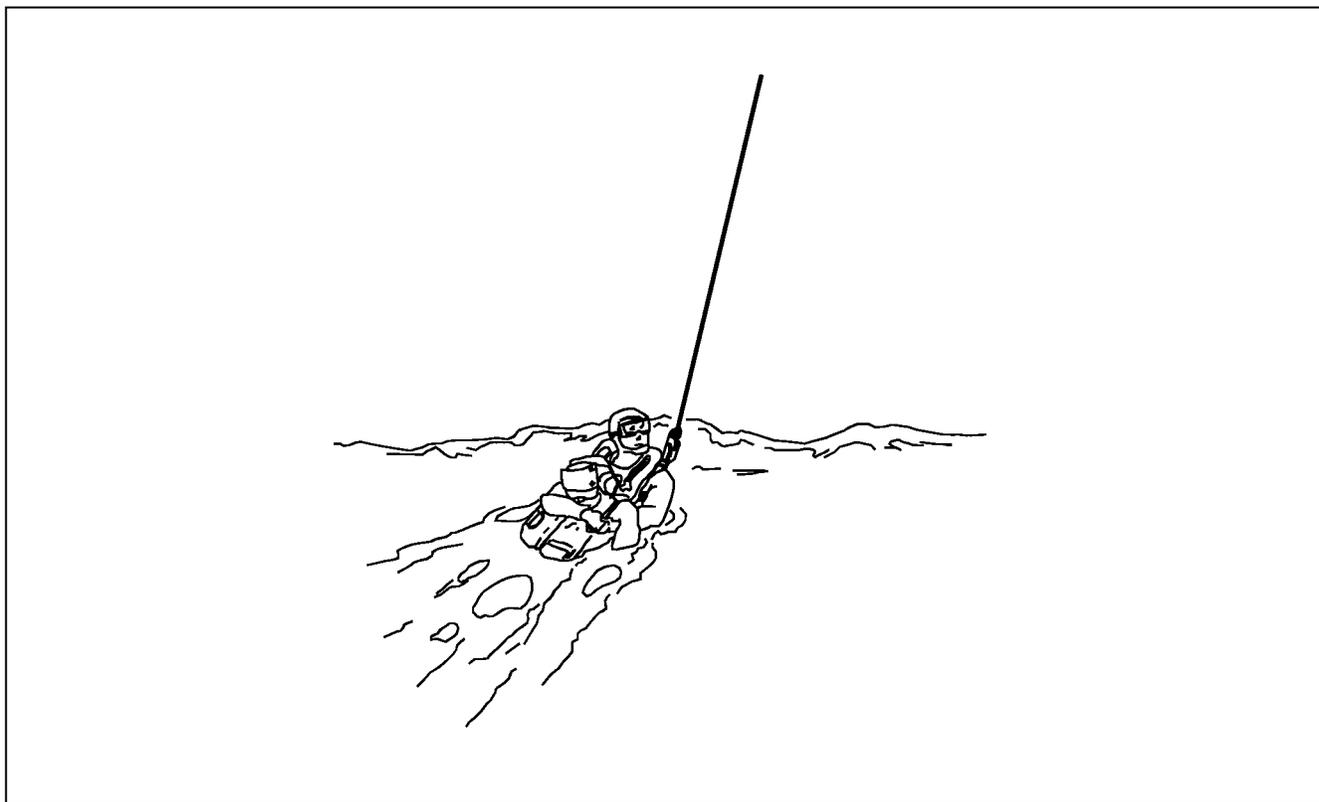


Figure 2-16. Recovery of Rescue Swimmer and Survivor

**Note**

The rescue strop arm retainer straps shall be used on all survivors being hoisted to the ship’s deck. Caution shall be taken by the recovery team and RS to ensure the survivor does not hit the side of the ship.

**2.8.3.5 Dual-Hoist Recovery**

When the rescue hook is lowered with a rescue strop, the RS has options depending on the survivor(s) condition, number of survivors, and whether the survivors are military or civilian. If the RS must use the rescue strop for the survivor, the RS has the option of riding up along with the survivor through a dual hoist. The following procedures shall be used when conducting a dual-hoist recovery:

1. After the RS has properly placed the survivor in the rescue strop, or has properly attached the survivors harness into the large rescue hook (Figure 2-17), the RS attaches the V-Ring on the RS’s harness directly into the large hook of the rescue hook and signals “raise cable” (Chapter 6).

**Note**

When conducting dual hoisting of RS and survivor during forecastle recovery, the in-haul line shall be manned with a minimum of eight personnel.

2. The rig captain conducts hoisting using standard voice procedures, as the RS guards the survivor from hitting the side of the ship.

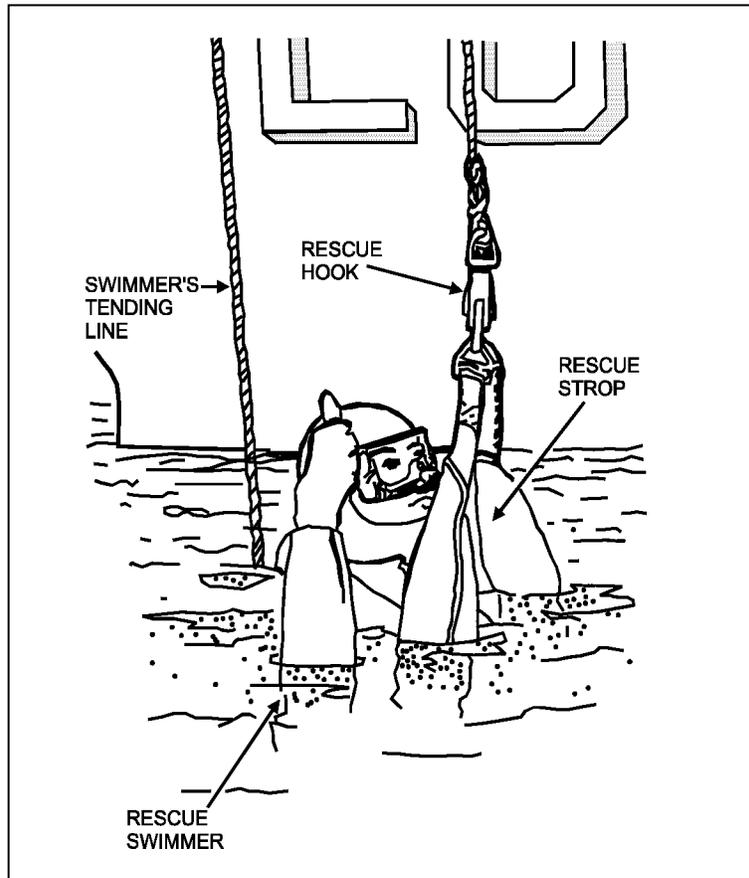


Figure 2-17. Rescue Swimmer Gives “Raise Cable” Hand Signal

3. Upon arrival of the survivor at deck level, the rig captain will have the davit swung in using the fore/aft vang lines, and have the rigger grab the rescue strop or RS’s harness assisting them on deck.

### 2.8.3.6 Rescue/MEDEVAC Litter Procedures (J-Bar Davit)

If the survivor is unconscious, has obvious severe injuries, or is complaining about head, back, or neck pain, the rescue/MEDEVAC litter shall be used when hoisting by the J-bar davit. The RS shall use the hand signal indicating the need for the rescue/MEDEVAC litter (Chapter 6) immediately giving the rig captain an opportunity to rig the rescue/MEDEVAC litter for deployment. Upon receiving the request by the RS, the following procedures shall be used:



- Spinal immobilization is essential to ejection egress aircrew. Aircrew who eject from aircraft must be presumed to have spinal injuries. Utilizing the MEDEVAC litter for recovery is highly recommended to help prevent a potentially life-threatening or permanent neurological injury. If the rescue litter is used, total spinal immobilization, including cervical collar and a backboard, should be applied at the earliest convenience.

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- An unconscious survivor automatically communicates an injury to the head, neck, and spine. The RS should be deployed and rescue/MEDEVAC litter utilized on an unconscious survivor.
- Use of the rescue/MEDEVAC litter is the RS's first choice of recovery devices for an unconscious survivor. The only exceptions would be that the survivor has immediate life-threatening injuries (no breathing, severe arterial bleeding), or extraordinary environmental conditions exist that prohibit rescue/MEDEVAC litter use.
- Lack of respiratory function (breathing) is a life-threatening condition. If the survivor is not breathing, the RS shall give two rescue breaths to the survivor, safely complete all applicable disentanglement/recovery procedures, and signal the SRU for immediate recovery of the survivor. After the completion of applicable disentanglement/recovery procedures, the RS shall continue rescue breathing for the survivor every 15–20 seconds until recovery by the SRU.

### Note

- The rescue (stokes litter) and the SAR MEDEVAC litter are different pieces of equipment. For the purposes of this section, they will be combined into the “rescue/MEDEVAC litter,” and any differences in procedures will be noted using the specific equipment nomenclature.
  - Use of patient restraint straps with hook-and-pile tape are no longer authorized. The rescue litter (stokes) is required to have the color-coded buckle type patient restraint straps (P/N: 140). The SAR MEDEVAC litter is required to have a new frame cover that integrates the color-coded buckle type patient restraint straps (P/N: 402-2).
1. The rig captain gives the order to ready the rescue/MEDEVAC litter for deployment.
  2. The rigger attaches the rescue/MEDEVAC litter face down with both hoisting slings connected into the large rescue hook behind the rescue/MEDEVAC litter. The trail line assembly is attached to the rescue/MEDEVAC litter and ready to be deployed.
  3. The rig captain ensures the rescue/MEDEVAC litter is prepared for deployment and gives the order to deploy the trail line to the RS.

### Note

During night operations, a chemical light strap and two chemical lights (activated) shall be attached to the foot and head of the rescue/MEDEVAC litter.

4. RS grabs the trail line.
5. The rig captain gives the order to deploy rescue/MEDEVAC litter by lowering it into the water inverted.
6. As the rescue/MEDEVAC litter enters the water the RS will use the trail line to pull the rescue/MEDEVAC litter 20–25 feet from the ship, at the same time the davit crew will provide slack on the in-haul line.
7. The RS shall place the survivor in the rescue/MEDEVAC litter IAW Chapter 3, Paragraph 3.9.3.

8. RS signals “raise cable” signal (Figure 2-18).
9. The rig captain gives the order “heave around” on the in-haul line as the RS guides the rescue/MEDEVAC litter under the J-bar davit.
10. Once all the excess in-haul line is reeled in, and the rescue/MEDEVAC litter is completely horizontal, on top of the surface of the water, the RS signals “hold” (Chapter 6), and conducts a final check of all fittings and straps.
11. The RS signals “raise in-haul line” (Chapter 6).
12. The rig captain gives “heave around” command on the in-haul line as the RS moves back approximately 20 to 25 feet away from the ship using the trail line to ensure the rescue/MEDEVAC litter remains parallel to, but does not strike the side of, the ship.
13. As the rescue/MEDEVAC litter reaches the deck’s edge, the rig captain gives orders to lower the temporary lifelines and swing in the J-bar davit using fore/aft vang lines.

**Note**

Due to the length of the dynabrake, it may be necessary to use an additional rigger to safely recover the rescue MEDEVAC litter.

14. The rigger shall ensure that the rescue/MEDEVAC litter is brought onboard headfirst.
15. The rig captain commands: “slack off” on the in-haul line, and lowers rescue/MEDEVAC litter to the deck.

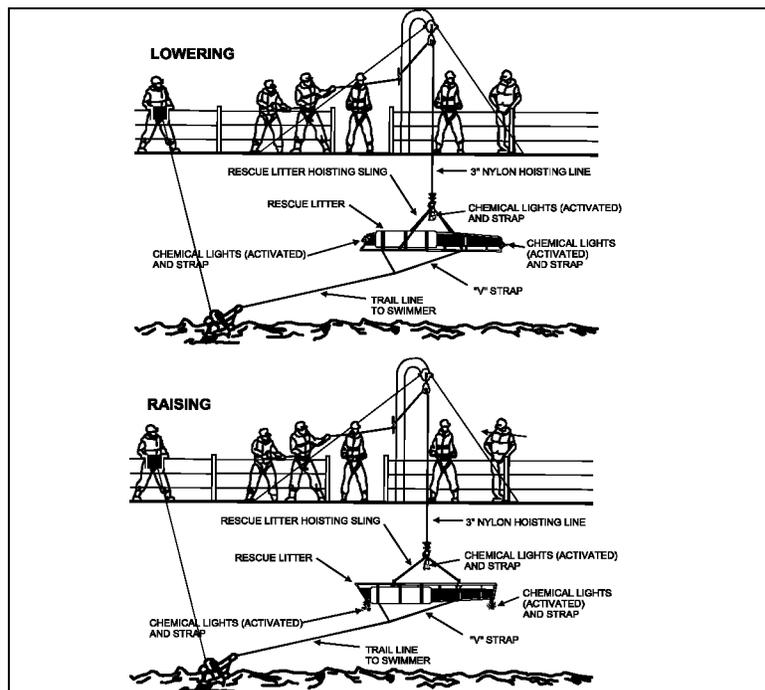


Figure 2-18. Raising and Lowering Rescue Litter

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16. The rigger shall replace the temporary lifeline and disconnect the rescue/MEDEVAC litter from the large rescue hook and trail line assembly.
17. The rigger shall then reattach the rescue strop into the large rescue hook for RS recovery.
18. The rig captain orders for J-bar davit to be swung out, to retrieve the RS.

## 2.9 LPD-17 SAN ANTONIO CLASS SHIPBOARD RECOVERY PROCEDURES

### 2.9.1 Preparation

1. The port-shell door operator and machinery room attendant will report to man overboard stations. A phone talker at the door will establish communication with the bridge. The outer shell door will be moved to the open position once authorized.



The temporary lifelines shall be in position prior to opening the outer shell door.

#### Note

- The Auxiliary division representative in the machinery room will ensure the hydraulic power equipment is actuating the side port door and cargo crane.
  - Watches shall be in position prior to RS deployment.
2. The forward and aft riggers will rig an 8 inch snatch block with a 3 inch hoisting line fair lead through the snatch block. The riggers will ensure the rescue strop is attached to the rescue hook. The cargo crane hook will be raised to the full upper limit position. The riggers will attach a portable cleat to the clover padeye in the deck to enable positive control of the hoisting line.
  3. The cargo crane is extended to position the snatch block 3–5 feet away from the side of the ship.

#### Note

Hoisting line handlers will ensure the rigger is able to maintain positive control of the rescue strop while cargo crane is extended into position.

4. The rescue swimmer (RS) will assume the ready position either sitting or standing at the outer edge of the cargo door, behind the temporary lifeline.

### 2.9.2 Rescue Swimmer Deployment From Port-Shell Door



Rescue Swimmer Deployment Port-Shell Door (Day or Night). For ease of illustration purposes, Figure 2-15 DOES NOT accurately display the correct manning

requirements for port-shell door deployment/recovery procedures. Correct manning requirements can be found in figure 2-1.

### Note

During night operations the RS, rescue strop, and rescue hook shall all be illuminated by chemical lights (Figure 2-12).

1. Don rescue strop. Upon lowering the temporary lifelines (required for RS safety), the rigger shall take positive control of the RS by the harness, disconnect one side of the rescue strop from the large rescue hook, bring the rescue strop around the RS, high under the arms, and reattach the strop into the large rescue hook (Figure 2-13).
2. Connect RS's tending line. The rigger brings tending line under the strop and attaches it into the friction V-ring on RS's left harness riser (Figure 2-14).

### Note

The RS's tending line shall be attached for all deployments. The rig captain should ensure the tending line is positioned so that the person(s) tending it have visual contact with the RS. The position must allow the tending line to be properly tended and minimize the risk of entanglement.

3. The rig captain has RS assume ready position either sitting or standing at deck's edge, and the rigger conducts a final check of the RS's gear.
4. The rig captain/rigger shall ensure that an "S" turn is on the cleat prior to lowering RS.
5. Upon permission from the Commanding Officer, the rig captain will direct the line handlers to lower the RS into the water (Figure 2-15).



- The RS shall never jump over the side or get out of the rescue strop until rescue strop is in the water.
  - The RS shall be prepared to fend off the ship with hands and feet, if the ship is rolling due to rough seas.
6. The RS swims clear of rescue strop upon water entry, clears mask, and gives hand signal, "I am all right" (Chapter 6).
  7. The rig captain retrieves the hoisting line and prepares to deploy any rescue device the RS requires to complete the rescue evolution. The rescue strop, when deployed to the RS in the water, will be attached to the hook by one side only.

**Note**

The RS's tending line may be used to assist the RS back to the ship if requested by the RS using the hand signal "heave around, tending line" (Chapter 6).

**2.9.3 Rescue Swimmer Recovery From Port-Shell Door****2.9.3.1 Location**

There are some risks in bringing a survivor alongside anywhere but at the forecastle. However due to the construction of San Antonio class ships, the mid-ships crane will be used for shipboard recoveries.



- From the ship's deck it may not be possible to determine if the survivor is still attached to the deployed parachute. The parachute may be submerged vertically below the survivor and could be sucked into the fire pumps, main induction, or ship's screws.
- Spinal immobilization is essential to ejection egress aircrew. Aircrew who eject from aircraft must be presumed to have spinal injuries. Utilizing the MEDEVAC litter for recovery is highly recommended to help prevent a potentially life-threatening or permanent neurological injury. If the rescue litter is used, total spinal immobilization, including cervical collar and a backboard, should be applied at the earliest convenience.
- An unconscious survivor automatically communicates an injury to the head, neck, and spine. The RS should be deployed and rescue/MEDEVAC litter utilized on an unconscious survivor.
- Use of the rescue/MEDEVAC litter is the RS's first choice of recovery devices for an unconscious survivor. The only exceptions would be that the survivor has immediate life-threatening injuries (no breathing, severe arterial bleeding), or extraordinary environmental conditions exist that prohibit rescue/MEDEVAC litter use.
- Do not use a cargo net or ladder for recovery of injured survivors aboard ship.
- Lack of respiratory function (breathing) is a life-threatening condition. If the survivor is not breathing, the RS shall give two rescue breaths to the survivor, safely complete all applicable disentanglement/recovery procedures, and signal the SRU for immediate recovery of the survivor. After the completion of applicable disentanglement/recovery procedures, the RS shall continue rescue breathing for the survivor every 15–20 seconds until recovery by the SRU.
- Inhalation of composite fibers resulting from aircraft fires and/or aircraft material damage may be harmful to the RS and rescue crew. If smoke is present, the RS shall be deployed upwind, and will approach the aircraft/debris in a manner as to avoid any smoke. Refer to Chapter 7, Paragraph 7.1.2 for more information.

### 2.9.3.2 Hoisting

The hoisting line shall be a minimum of 20 fathoms (12 feet) in length, with the rescue hook attached. Using a rescue strop attached to the rescue hook simplifies hoisting personnel from the water. Some of the advantages are:



The large hook is the only portion of the rescue hook to be used for hoisting personnel. The small hook of the rescue hook shall never be used to hoist personnel.

#### Note

The rig captain shall ensure that the rescue hook is equipped with a rescue device that has inherent flotation (rescue strop, rescue litter, rescue seat, rescue basket) and chemical lights, if needed (night/IMC).

1. All Navy and Marine Corps aircrews are familiar with the rescue strop and are trained in its use.
2. The rescue strop floats on the surface.
3. The rescue strop can be tossed a short distance, which is an advantage over nets, rescue/MEDEVAC litters, and seats that must be brought directly over or under the survivor.

### 2.9.3.3 Survivor Recovery Procedures (Side-Port Door/Crane)

Selection of the rescue devices will generally be made prior to rescue swimmer deployment, and is determined primarily by the physical conditions of the survivor(s) and the single or multiple status of the rescue. In situations where two or more survivors are to be lifted simultaneously, the weight-bearing limitations and amount of line handlers must be considered. It is essential that the RS and side-port recovery deck crew be knowledgeable in the applications and utilization of all rescue devices, hand signals, and voice procedures. Chapter 3 details procedures for the use of the various devices for the RS, and Chapter 6 contains RS hand signals for devices.

### 2.9.3.4 Rescue Strop Recovery

The rescue strop is a quick and easy way to deploy/recover the RS or recover a survivor during a shipboard operation. The rescue strop is designed to accommodate one person and is deployed to the RS in the water with one side attached into the large rescue hook, and one side free. The RS may also be recovered by attaching the Lifting V-Ring of the RS's harness directly into the large rescue hook. The following procedures shall be used when recovery by the rescue strop:

1. RS performs approach and rescue procedures IAW Chapter 3.
2. RS signals "ready for pickup" (Chapter 6) for the rescue strop to be lowered.
3. As the RS tows the survivor to the ship, the rescue hook is lowered with a rescue strop attached.
4. The RS places the survivor in the rescue strop IAW Chapter 3, Paragraph 3.9.2 and gives the "raise cable" hand signal (Chapter 6), indicating ready for pick up. If the survivor is military, a lifting V-Ring or gated

D-Ring will be attached to the aircrew survival harness. The RS may attach the lifting ring directly to the rescue hook for hoisting.

5. The rig captain conducts hoisting using standard voice procedures as the RS maintains control of the survivor until the survivor is clear of the water.
6. The rig captain directs the crane operator to retract the crane until the RS and/or the survivor are over the deck.



The rig captain must ensure the hoisting line handlers maintain line tension while crane is retracted to avoid survivor/RS contact with ship's edge.

7. The rig captain will direct hoisting line handlers to lower the survivor to ship's deck. The rigger will grab the rescue strop to assist the survivor to the deck. Upon completion of survivor recovery, the rig captain lowers the rescue hook with the rescue strop attached to retrieve the RS.



- If the ship is taking rolls to the degree that the survivor will contact the side of the ship during hoisting, the RS should accompany the survivor to help prevent further injury during hoisting.
- The rescue strop arm retainer straps shall be used on all survivors being hoisted to the ship's deck. Caution shall be taken by the recovery team and RS to ensure the survivor does not hit the side of the ship.

### **2.9.3.5 San Antonio Class Rescue/MEDEVAC Litter Procedures**

If the survivor is unconscious, has obvious severe injuries, or is complaining about head, back, or neck pain, the rescue/MEDEVAC litter shall be used when hoisting by the side-port crane. The RS shall use the hand signal "Deploy Rescue Litter" indicating the need for the rescue/MEDEVAC litter (Chapter 6) immediately giving the rig captain an opportunity to rig the rescue/MEDEVAC litter for deployment. Upon receiving the request by the RS, the following procedures shall be used:



- Spinal immobilization is essential to ejection egress aircrew. Aircrew who eject from aircraft must be presumed to have spinal injuries. Utilizing the MEDEVAC litter for recovery is highly recommended to help prevent a potentially life-threatening or permanent neurological injury. If the rescue litter is used, total spinal immobilization,

including cervical collar and a backboard, should be applied at the earliest convenience.

- An unconscious survivor automatically communicates an injury to the head, neck, and spine. The RS should be deployed and rescue/MEDEVAC litter utilized on an unconscious survivor.
- Use of the rescue/MEDEVAC litter is the RS's first choice of recovery devices for an unconscious survivor. The only exceptions would be that the survivor has immediate life threatening injuries (no breathing, severe arterial bleeding), or extraordinary environmental conditions exist that prohibit rescue/MEDEVAC litter use.
- Lack of respiratory function (breathing) is a life-threatening condition. If the survivor is not breathing, the RS shall give two rescue breaths to the survivor, safely complete all applicable disentanglement/recovery procedures, and signal the SRU for immediate recovery of the survivor. After the completion of applicable disentanglement/recovery procedures, the RS shall continue rescue breathing for the survivor every 15–20 seconds until recovery by the SRU.

#### **Note**

- The rescue (stokes litter) and the SAR MEDEVAC litter are different pieces of equipment. For the purposes of this section, they will be combined into the “rescue/MEDEVAC litter,” and any differences in procedures will be noted using the specific equipment nomenclature.
  - Use of patient restraint straps with hook-and-pile tape are no longer authorized. The rescue litter (stokes) is required to have the color-coded buckle type patient restraint straps (P/N: 140). The SAR MEDEVAC litter is required to have a new frame cover that integrates the color-coded buckle type patient restraint straps (P/N: 402-2).
1. The rig captain gives the order to ready the rescue/MEDEVAC litter for deployment.
  2. The rigger attaches the rescue/MEDEVAC litter face down with both hoisting slings connected into the large rescue hook behind the rescue/MEDEVAC litter. The trail line assembly is attached to the rescue/MEDEVAC litter with the “V” strap and readied to be deployed.
  3. The rig captain ensures the rescue/MEDEVAC litter is prepared for deployment and gives the order to deploy the trail line to the RS.

#### **Note**

During night operations, a chemical light strap and two chemical lights (activated) shall be attached to the foot and head of the rescue/MEDEVAC litter.

4. RS grabs the trail line.
5. The rig captain gives the order to deploy rescue/MEDEVAC litter by lowering it into the water inverted.
6. As the rescue/MEDEVAC litter enters the water the RS will use the trail line to pull the rescue/MEDEVAC litter 20–25 feet from the ship, at the same time the hoist line crew will provide slack on the hoist line.

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7. The RS shall place the survivor in the rescue/MEDEVAC litter IAW Chapter 3, Paragraph 3.9.3.
8. The RS signals “raise cable” (Chapter 6).
9. The rig captain gives the order “heave around” on the hoist line as the RS guides the rescue/MEDEVAC litter under the side-port crane.
10. Once all the excess hoist line is reeled in, and the rescue/MEDEVAC litter is completely horizontal on top of the surface of the water, the RS signals “hold” (Chapter 6), and conducts a final check of all fittings and straps.
11. The RS signals “raise cable” (Chapter 6).
12. The rig captain gives “heave around” command on the hoist line as the RS moves back approximately 20 to 25 feet away from the ship using the trail line to ensure the rescue/MEDEVAC litter remains parallel to, but does not strike, the side of the ship.
13. As the rescue/MEDEVAC litter reaches the deck’s edge, the rig captain gives orders to lower the temporary lifelines and directs the crane operator to retract the crane until the rescue/MEDEVAC litter reaches the deck.



The rig captain must ensure the hoisting line handlers maintain line tension while crane is retracted to avoid rescue/MEDEVAC litter contact with ship edge.

### Note

Due to the length of the dynabrake, it may be necessary to use an additional rigger to safely recover the rescue MEDEVAC litter.

14. The rigger shall ensure that the rescue/MEDEVAC litter is brought onboard headfirst.
15. The rig captain commands “slack off” on the hoisting line, and lowers rescue/MEDEVAC litter to the deck.
16. The rigger shall replace the temporary lifeline and disconnect the rescue/MEDEVAC litter from the large rescue hook and trail line assembly.
17. The rigger shall then reattach the rescue strop into the large rescue hook for RS recovery.
18. The rig captain orders the cargo crane to be extended to position the snatch block 3–5 feet away from the side of the ship, to retrieve the RS.

## 2.10 SURFACE VESSEL MEDICAL EVACUATION PROCEDURES

1. Helicopter rescue operations from vessels without landing facilities are always demanding. The aviation procedures for MEDEVAC are contained in Chapter 1, Paragraph 1.7.2. When it becomes necessary to transfer personnel at sea by helicopter, there are several hoisting devices that a helicopter crew may elect to use. These

devices are discussed in Chapters 1 and 5. The devices most frequently employed are the rescue strop, hoisting vest, and rescue/MEDEVAC litter. Surface vessel deck crews should be thoroughly briefed and indoctrinated on the use of this gear prior to operations.

#### **Note**

If the deck crew is unfamiliar with helicopter equipment or procedures, they may request the helicopter deploy a crewman to assist. Additionally, the HAC may decide to deploy a crewman to assist the deck crew without solicitation.

2. There are two standard hoisting methods that can be utilized. These methods consist of the plumb hover and the trail line procedure. The ship should ascertain from the helicopter crew the rescue device to be used and method of transfer to be employed, and stand by accordingly. Preparation for helicopter operations shall be performed IAW procedures outlined in Chapter 5, Paragraph 5.3 of NWP 3-04.1.

### **2.10.1 Preparing for Transfer Operations**

Prior to conducting helicopter operations, flight quarters shall be set IAW Chapter 4 of NWP 3-04.1. Personnel/cargo transfer may be accomplished either by landing the helicopter or by helicopter hoist over the deck/transfer area. The preferred method is to land the helicopter IAW procedures outlined in Chapter 4 of NWP 3-04.1 on ships so certified. However, the same relative wind and deck conditions are required for hovering as are required for land/launch operations.

#### **Note**

Information for passenger manifesting and briefing of handling crews are outlined in Chapter 5 of NWP 3-04.1.

### **2.10.2 Rescue Equipment Donning Procedures**



- The large hook is the only portion of the rescue hook to be used for hoisting personnel. The small hook of the rescue hook shall never be used to hoist personnel.
- In all cases (whether the survivor is determined to be combative, panicked, or cooperative) the rescue crewman shall not hoist survivors from an overland or maritime environment without the proper application of the selected rescue device to include safety straps or safety devices outlined in this manual.

#### **2.10.2.1 Hoisting Vest**

The hoisting vest is donned by:

1. Stepping through the leg openings and drawing the vest up
2. Placing the arms through the openings and pulling the vest over the shoulders
3. Connecting the snap hooks to the rings (Figure 2-19)

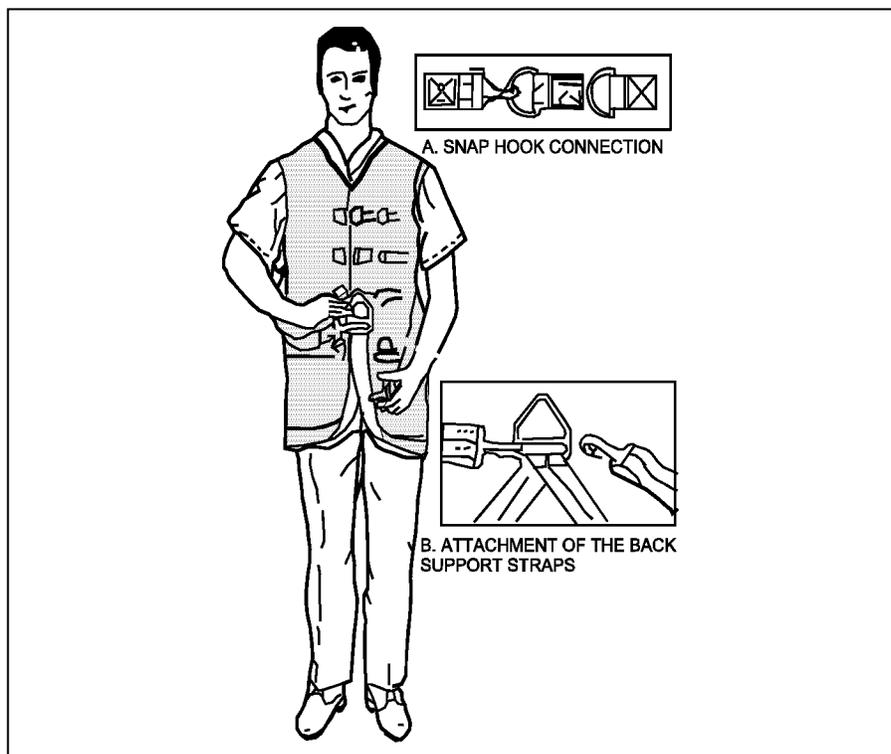


Figure 2-19. Hoisting Vest Donning Procedures

4. Attaching the snap hooks of the back support straps to the lifting V-Ring (Figure 2-19)
5. Donning a flotation device (LPP-1/1A or MK-1)
6. Connecting the hoisting vest lifting V-Ring into the large rescue hook.

### 2.10.2.2 Rescue Strop

Place the survivor in the rescue strop using procedures in Paragraph 3.9.2.

### 2.10.2.3 Rescue/MEDEVAC Litter

#### Note

- The trail line assembly shall always be used in conjunction with the rescue/MEDEVAC litter.
- Place the survivor in the rescue/MEDEVAC litter using procedures in Chapter 3.

### 2.10.3 Plumb Hover

If landing is not practicable, the transfer will be made via hoist. The pilot will make his approach to the ship by flying into the relative wind and establishing a plumb hover (a hover over the transfer point). Procedures for transferring personnel from the helicopter to the ship or from the ship to the helicopter are outlined in Chapter 5 of NWP 3-04.1. It is not necessary to use the trail line in a plumb hover as the helicopter will be directly over the deck.

### 2.10.4 Trail-Line Hoisting Procedures

There are situations that can make the plumb line method of transferring personnel by helicopter to or from surface vessels extremely hazardous. The situations include variations in the vessel size, movement or location of obstructions, visible horizon, sea state, and weather conditions. Use of the trail line in such situations will greatly increase the safety of ship-to-helicopter transfers while decreasing the pilot workload. When trail line hoisting is employed (Figures 2-20 through 2-27), the following will occur:

1. When the helicopter is established in a portside hover, the trail line will be lowered.
2. The deck personnel should take control of the trail line once it comes in contact with the deck.



To avoid electrical shock, personnel shall not come in contact with the rescue device until it is properly grounded by either utilizing a separate grounding device or allowing the rescue device to contact the deck (Figure 2-20).

3. As the rescue device is lowered, the deck crew shall haul the trail line in until the rescue device is on the deck.

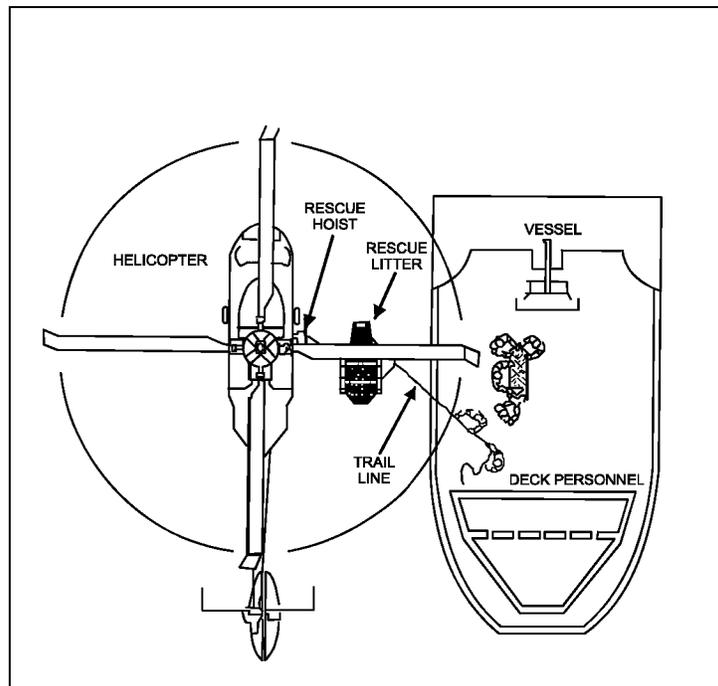


Figure 2-20. Trail Line Contact for Deck Personnel

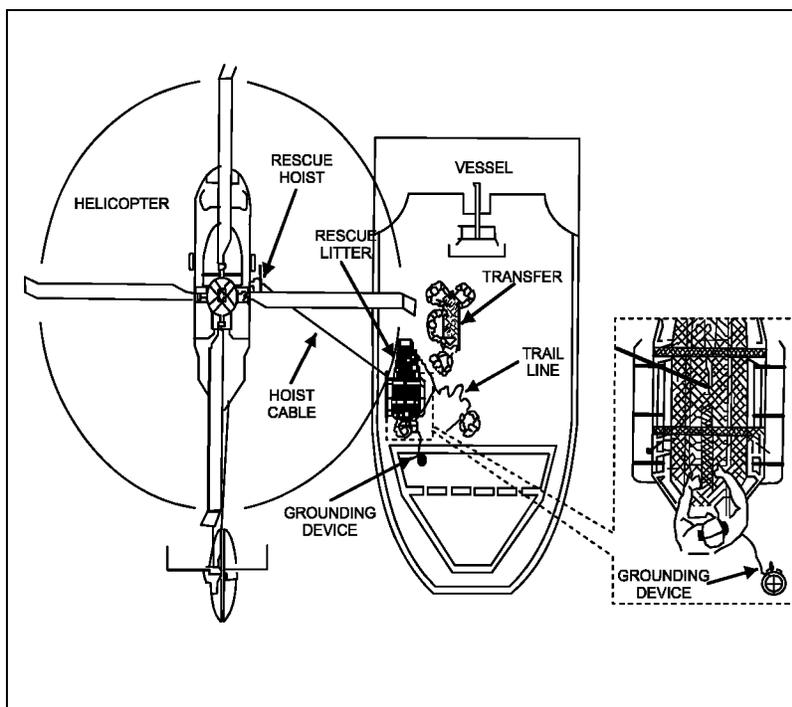


Figure 2-21. Proper Grounding of Rescue Device for Deck Personnel



Under no circumstances shall a line cable from an airborne helicopter be tied, or otherwise secured, to the ship.

4. Disconnect the rescue device from the rescue hook, and assign one of the deck personnel to hold the rescue hook until it is needed. The aircraft shall pay out cable to allow for the relative movement between the vessel and the helicopter (Figure 2-22).
5. Place the transferee in the rescue device, and then reconnect the device into the large rescue hook (Figure 2-23).
6. The deck personnel shall then tend the trail line, and give the “raise cable” hand signal (Chapter 6) when ready for hoisting to begin (Figure 2-24).
7. The hoist operator shall take tension on the cable, and begin to lift the rescue device until it is clear of all deck obstructions (Figure 2-25).
8. As the helicopter crewman takes up tension on the rescue hoist, the deck crew will guide the rescue device up and over the side of the ship.
9. Once the rescue device is clear of the ship deck and clear of obstructions, the deck crew shall let out tension on the trail line as the helicopter crewman slightly raises the hoist so as to keep survivor clear of water until the rescue device is plumb to the rescue hoist of the helicopter (directly beneath the rescue hoist).

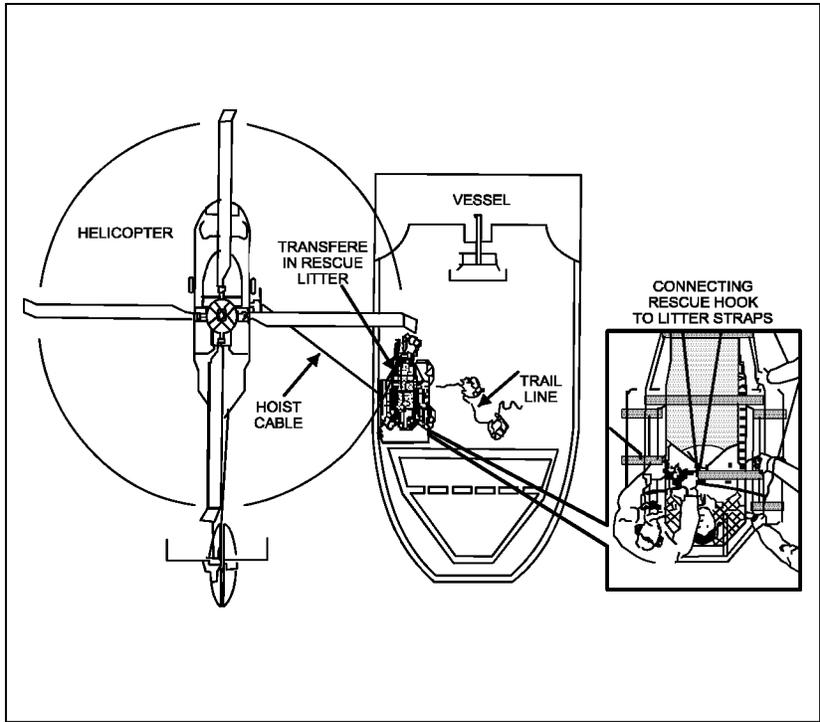


Figure 2-22. Hoist Cable Disconnected and Cable Paid Out

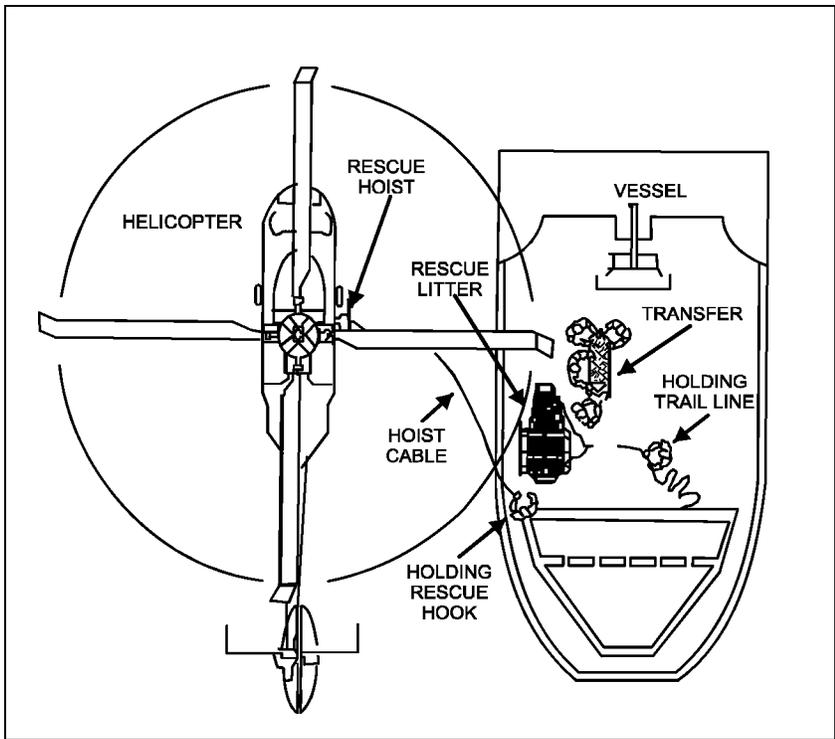


Figure 2-23. Connection of Rescue Device to Double Rescue Hook

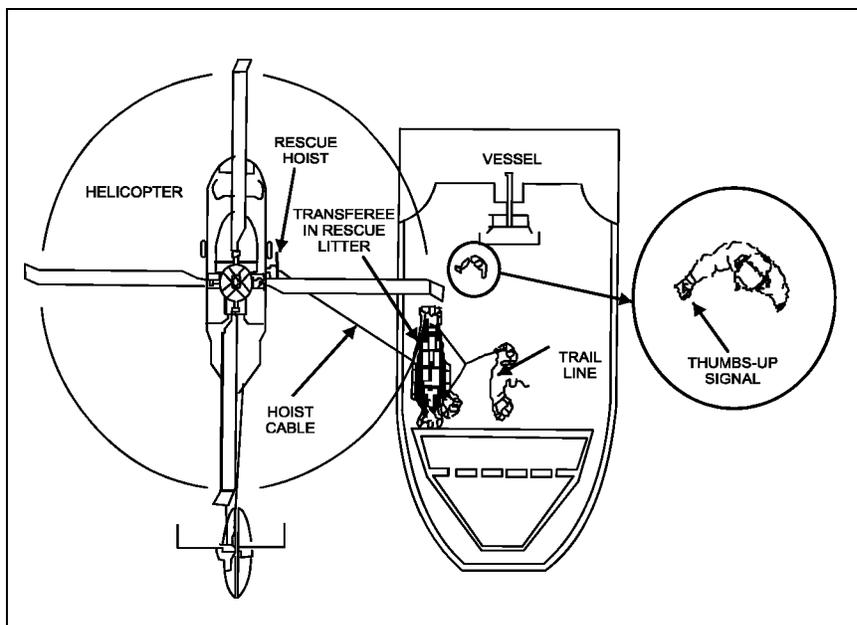


Figure 2-24. Ready for Hoisting Signal from Deck Crew to Helicopter

10. Once the plumb position of the rescue device is achieved, the deck crew shall keep the device plumb to the helicopter rescue hoist.
11. If the rescue/MEDEVAC litter is being utilized:
  - a. The deck crew shall keep the rescue/MEDEVAC litter parallel to the fuselage with the head of the rescue/MEDEVAC litter facing forward for H-53 and H-46 helicopters, and the head facing the tail rotor for other helicopters (Figure 2-25).
  - b. Once the rescue/MEDEVAC litter is at the door of the helicopter, the deck crew maneuvers the rescue/MEDEVAC litter to turn head first into the helicopter (Figure 2-26).

**Note**

The confined space in the H-60 cabin requires that the rescue/MEDEVAC litter enter the cabin feet first in order to properly attend to the survivor once in the aircraft.

12. Once the rescue device is in the helicopter, the deck crew shall release the trail line overboard and the helicopter crewman will pull it in (Figure 2-27).

**2.11 OVERWATER HELICOPTER HOISTING FROM A RESCUE BOAT**

The helicopter maintains a 5- to 10-knot forward air taxi, where the rescue boat takes a four o'clock position relative to the helicopter hoist operator. While matching the speed of the helicopter, the boat operator then maneuvers under the helicopter as the basket/litter is lowered. With a buffeting rotor wash of over 100 miles per hour, the rescue boat crew uses the lowering rescue device as a reference point while going through the curtain of turbulence. The basket/litter is static discharged and then is pulled into the boat where the transfer of the victim takes place.

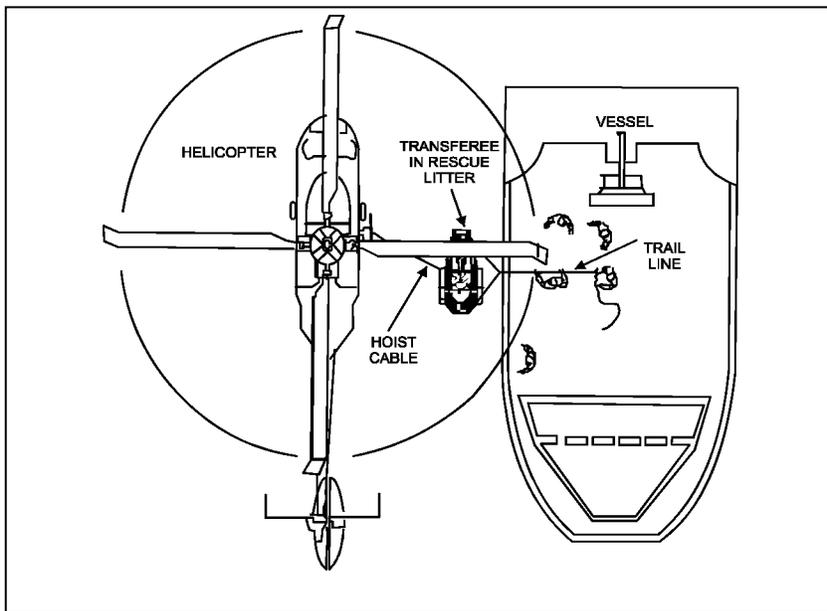


Figure 2-25. Rescue Device Proper Hoisting Position Note

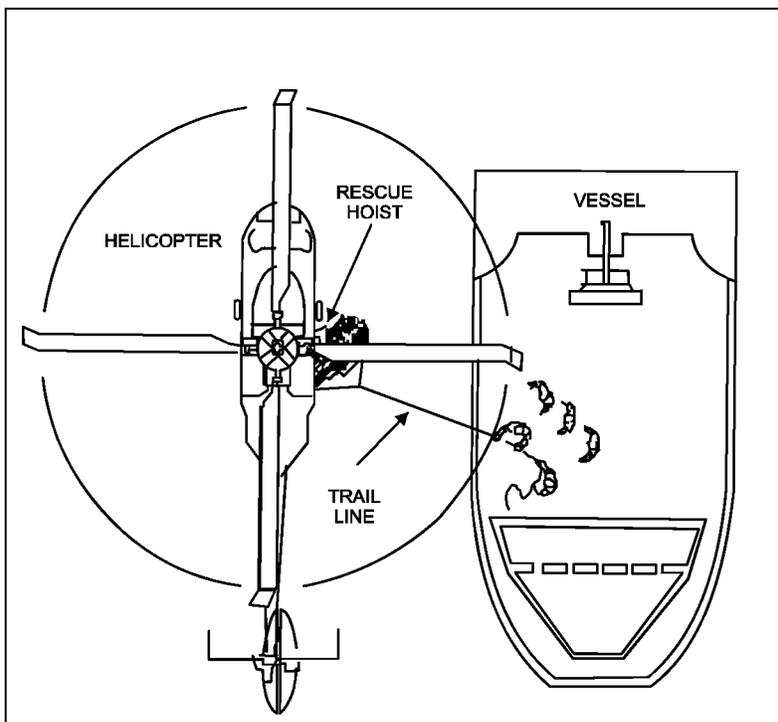


Figure 2-26. Deck Personnel Rescue/MEDEVAC Litter Maneuvering

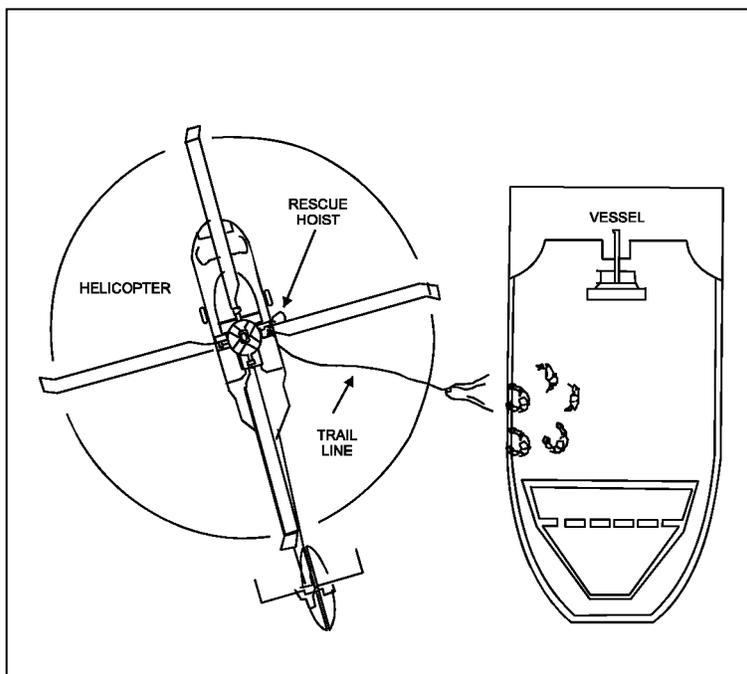


Figure 2-27. Deck Crew Release Trail Line Overboard

## 2.12 SALVAGE OPERATIONS

Rescue units should salvage as much debris in the crash area as possible, such as helmets, canopies, and nose cones, which may float for only short periods. Any salvaged gear may materially assist in the subsequent investigation of an accident. Ensure that any recovered gear is not tampered with; the exact condition is often significant.



**WARNING**

Inhalation of composite fibers resulting from aircraft fires and/or aircraft material damage may be harmful to the RS and rescue crew. If smoke is present, the RS shall be deployed upwind, and will approach the aircraft/debris in a manner as to avoid any smoke. Refer to Chapter 7, Paragraph 7.1.2 for more information on procedures and PPE.

## CHAPTER 3

# Rescue Swimmer Procedures

### 3.1 RESCUE SWIMMER PROCEDURES

Immediately upon water entry, the RS establishes visual communications with SRU personnel, and indicates “I am all right” via hand signal. The aviation RS shall next perform a radio check with the SRU. The RS will then approach the survivor(s).

### 3.2 UNITED STATES NAVAL LIFESAVING APPROACH PROCEDURES

A U.S. Naval Rescue Swimmer may utilize three approaches: Rear Surface Approach, Front Surface Approach, and the Underwater Approach. These approaches may be employed on either conscious or unconscious survivors, with or without flotation.



Prior to the RS taking physical control of a survivor, the RS shall take into account the type of injuries the survivor has communicated. *An unconscious survivor automatically communicates an injury to the head, neck, or spine.* The RS shall use only enough force as necessary to gain positive control of the survivor, being ever mindful of the RS’s duty to prevent further injury to the survivor.

#### Note

If the RS chooses to give up his/her personal flotation, refer to Survivor Emergency Flotation Procedures in Paragraph 3.6.1 of this chapter.

#### 3.2.1 Rear Surface Approach

The Rear Surface Approach is the most common approach used by RSs. The Rear Surface Approach should be used for all conscious survivors. The following procedures are to be used for the Rear Surface Approach:

1. Approach the survivor from the rear, with head out of the water and eyes on the survivor.
2. Upon reaching 6–8 feet of distance from the survivor, execute a quick reverse and attempt to establish communications (Figure 3-1).

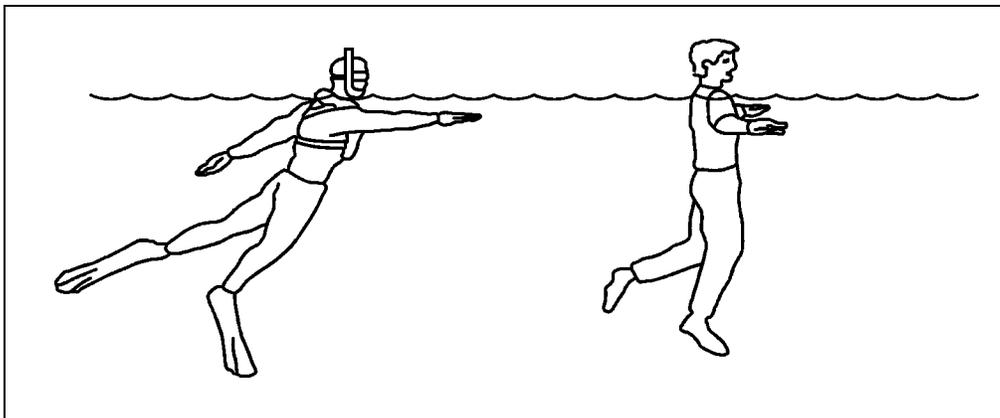


Figure 3-1. Rear Surface Approach (1 of 3)

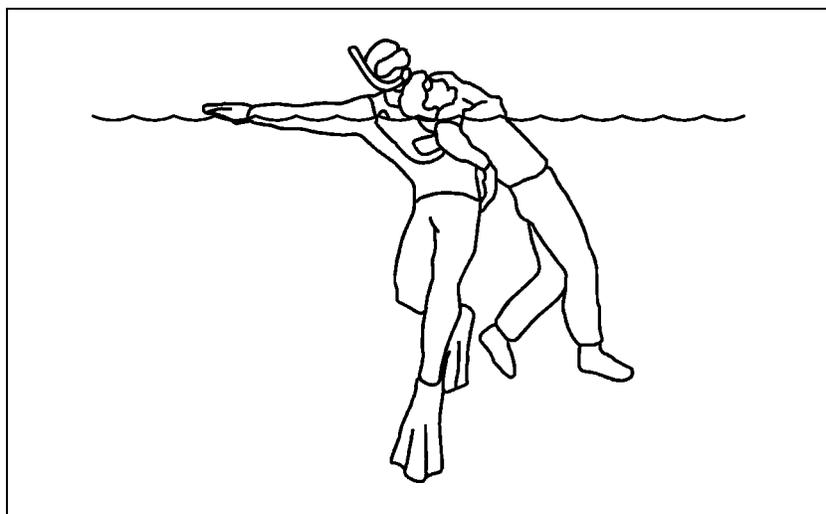


Figure 3-1. Rear Surface Approach (2 of 3)

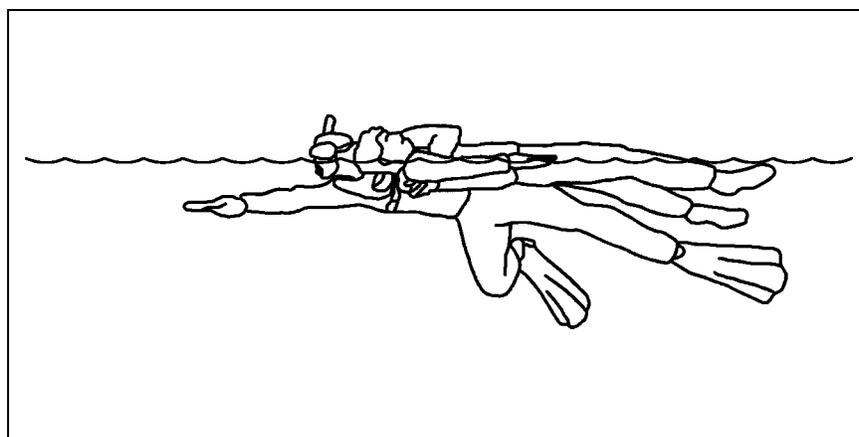


Figure 3-1. Rear Surface Approach (3 of 3)

**Note**

If the survivor appears unresponsive, splash and yell to get the survivor’s attention.

- 3. Secure survivor in a cross-chest carry (Figure 3-4), or equipment/collar tow (Figure 3-5).

**3.2.2 Front Surface Approach**

The Front Surface Approach should be the RS’s first choice when approaching an unconscious survivor. The following procedures are to be used for the Front Surface Approach:

- 1. Approach the front of the survivor with head out of the water and eyes on the survivor.
- 2. Upon reaching an arms-length distance from the survivor, execute a quick reverse (Figure 3-2A).
- 3. Timing the movement, the RS’s arm crosses down above and firmly grasps the back of the survivor’s wrist, right hand to right wrist, or left hand to left wrist. The RS then leans back, flutter kicks, and pulls the survivor’s arm across and in front of the RS’s body, turning the survivor around (Figure 3-2B).
- 4. When the survivor’s back is fully turned, the RS places the survivor in a cross-chest carry, or equipment/collar tow (Figure 3-2C).

**Note**

If the survivor is conscious, every attempt shall be made to approach the survivor from the rear. This can be accomplished by either asking the survivor to turn around, or by swimming to the rear of the survivor and executing a rear surface approach.

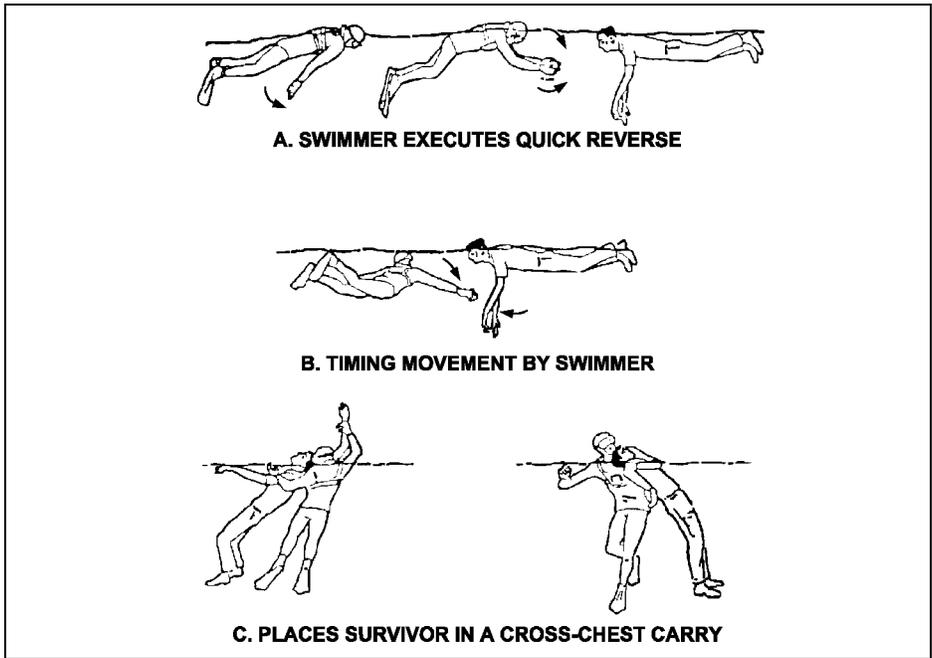


Figure 3-2. Front Surface Approach

### 3.2.3 Underwater Approach

Used primarily for approaching a panicked survivor (definition of a panicked survivor can be found in Paragraph 3.6.4). The following procedures are to be used for the Underwater Approach:



Do not use the underwater approach if the survivor is wearing and/or entangled in a parachute.

#### Note

The tending line, when attached to a surface RS, may interfere with the underwater approach.

1. Approach the front of the survivor with head out of the water and eyes on the survivor.
2. Upon reaching a distance of 6 to 8 feet from the survivor, assess the situation. When comfortable, execute a surface dive and swim under the survivor (Figure 3-3A).

#### Note

The RS must be aware of the added buoyancy of the wet/dry suit and avoid premature surfacing.

3. Execute a half turn (the survivor's back should be toward the RS) and surface (Figure 3-3B).
4. While surfacing, place survivor in a controlled cross-chest carry (Figure 3-3C).

### 3.3 CARRY PROCEDURES

The two carries to be utilized by the RS are: cross-chest carry, and equipment/collar tow.



Prior to the RS taking physical control of a survivor, the RS shall take into account the type of injuries the survivor has communicated. *An unconscious survivor automatically communicates an injury to the head, neck, and spine.* The RS shall use only enough force as necessary to gain positive control of the survivor, being ever mindful of the RS's duty to prevent further injury to the survivor.

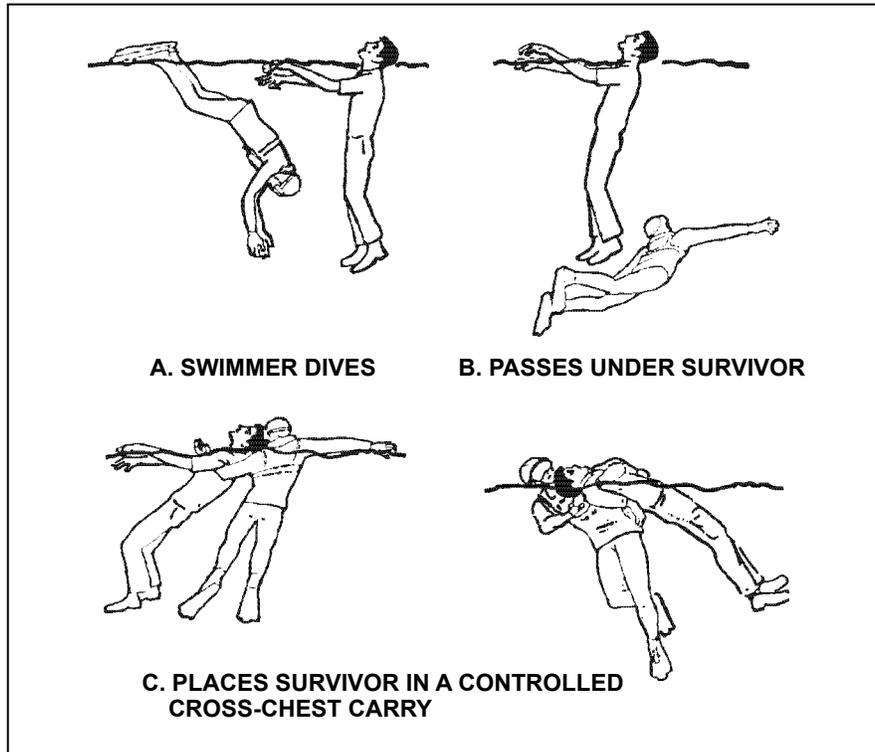


Figure 3-3. Underwater Approach

### 3.3.1 Cross-Chest Carry

The procedures for the cross-chest carry (Figure 3-4) are:

1. From a position behind the survivor's shoulder, the RS reaches across the chest and pulls the survivor from under the armpit with the back of the RS's hand.
2. The survivor's shoulder is then tucked securely into the RS's armpit and the arm firmly clamped against the survivor's chest.
3. The RS turns to the side with the hip directly against the small of the survivor's back. The RS strokes vigorously with the legs, using a flutter kick to provide propulsion.

#### Note

The cross-chest carry may be difficult to perform on personnel with inflated flotation devices.

4. Should the survivor become panicked and resist the RS's grasp, the RS shall lock his/her free hand under the survivor's armpit to complete a controlled cross-chest carry.

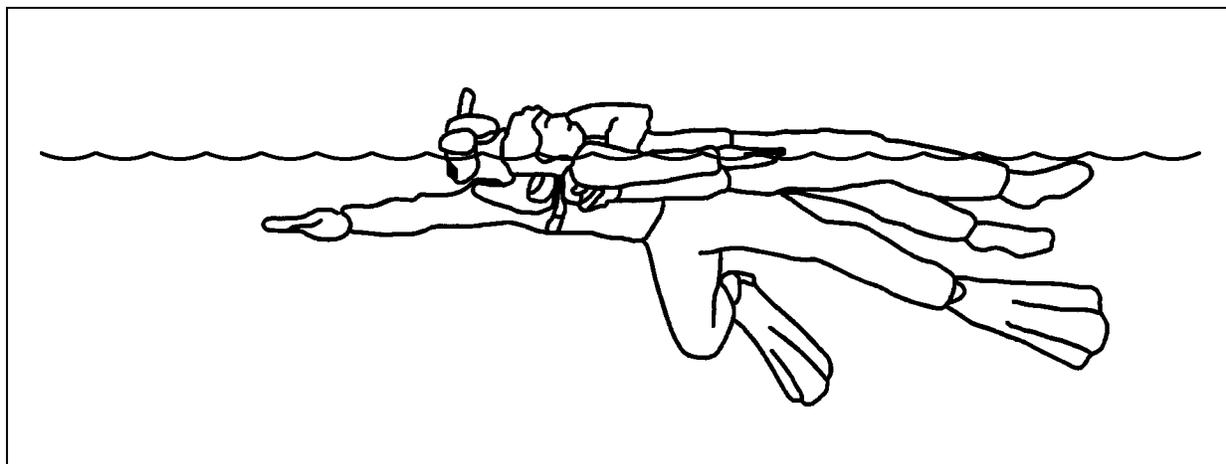


Figure 3-4. Cross-Chest Carry

### 3.3.2 Equipment/Collar Tow

The procedures for the equipment/collar tow follow:



#### WARNING

Do not grasp the survivor in a manner that may result in restricted breathing or circulation.

1. Grasp the survivor's shirt collar or flight equipment (not flotation) from behind and between the shoulder blades with the arm straight and locked at the elbow (Figure 3-5A and B).
2. The RS assumes the sidestroke position, and strokes vigorously with the legs, using a flutter kick to provide propulsion.

### 3.4 RELEASE/ESCAPE PROCEDURES

In the event the RS is grabbed by either a panicked or a combative survivor, the RS must be able to break free from both a front and a rear head hold (escape), or immediately reverse the physical contact of the survivor and regain control without harming the survivor or themselves (release).

#### Note

If the RS is unable to determine whether the survivor is panicked or combative, the RS should escape from the survivor's grasp, move to a safe distance, and reassess the situation. The RS should then utilize the appropriate procedures prior to reattempting physical contact/control of the survivor. Panicked or combative survivor procedures are outlined in Paragraph 3.6.4.

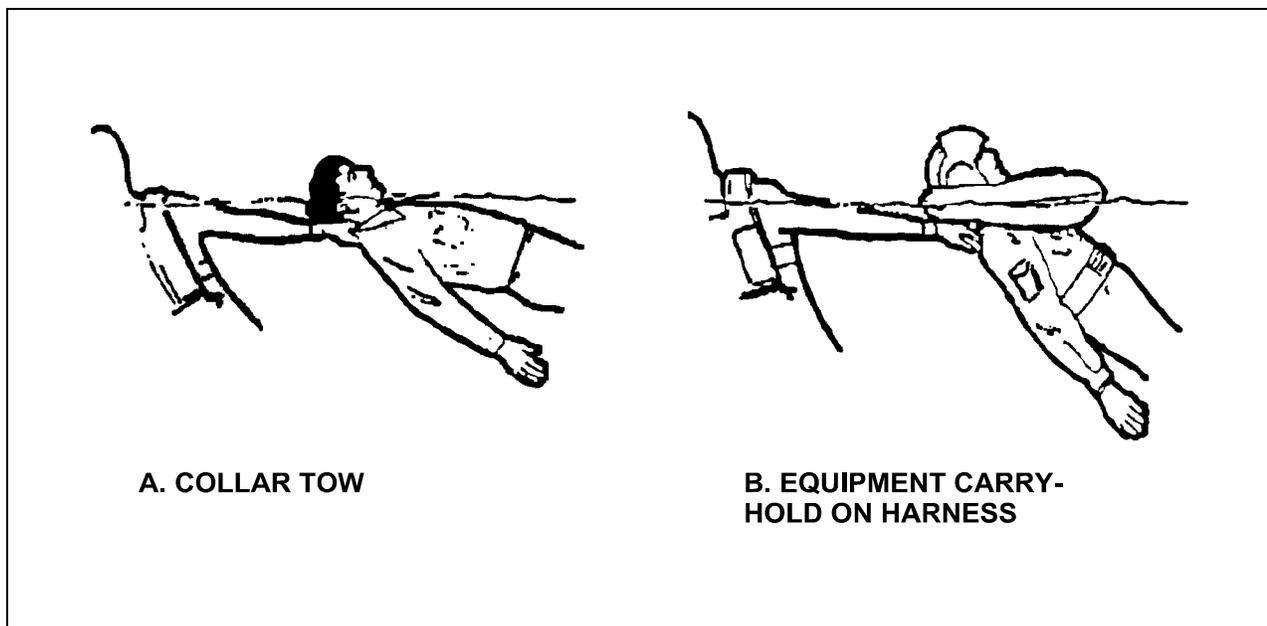


Figure 3-5. Equipment/Collar Tow

### 3.4.1 Front Head Hold Release

The survivor grasps the RS from the front, about the head, with both arms. The survivor may scissor the RS's waist with the legs. The release procedures are as follows:

1. As soon as the survivor's arms are felt encircling the head, the RS takes a quick "bite" or breath of air, and tucks chin down and to one side. The RS extends his/her arms outward, moving them rapidly upwards several times, which will produce downward movement, submerging the survivor and RS (Figure 3-6A).
2. If the survivor's head is on the right of RS's head, the RS brings his/her right arm up and over the encircling arm and places hand securely against survivor's right cheek, the little finger against the side of survivor's nose and thumb hooked under the jaw (Figure 3-6B).

#### Note

If the survivor's head is at the RS's left side, the method is reversed.

3. The remaining free hand of the RS is brought up beneath the survivor's other arm, seizing it in a grip with the thumb just above the survivor's elbow.
4. In one continuous motion, the survivor's head is pressed out and around with the right hand while the left hand is lifting the survivor's arm over the RS's head and sweeping it across to the far side. This is a pressing movement, and it is continued until the survivor's back is to the RS (Figure 3-6C).
5. The RS's left hand continues to hold the survivor's arm until the right hand can be shifted from the survivor's face to the chest and brought into a controlled cross-chest carry (Figure 3-6D).

#### Note

Should the survivor's head be on the RS's left side, the method is reversed.

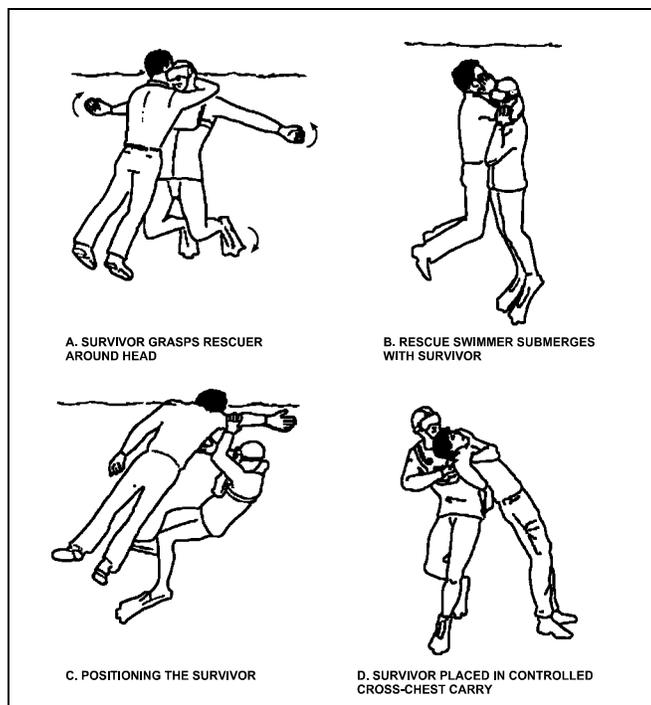


Figure 3-6. Front Head Hold Release

6. If survivor places a scissors lock on the RS with their legs, the scissors lock is rarely held after the head hold is released. However, if it is not released, the RS should use one hand between the ankles to unlock the survivor's crossed feet.

### 3.4.2 Front Head Hold Escape

When grasped around the head and shoulders from the front by the survivor, the RS shall immediately:

1. As soon as the survivor's arms are felt encircling the head, the RS takes a quick "bite" or breath of air and tucks chin down and to one side. The RS extends his/her arms outward, moving them rapidly upwards several times, which will produce downward movement, submerging the survivor and RS (Figure 3-7A).
2. Without pause, the RS places both hands on the front of the survivor's hips with the heels of the hands against the body, fingers extended, and thumbs grasping the survivor's sides. By forcefully pressing and extending the arms, the RS pushes the survivor's body back and up toward the horizontal position. This leverage will loosen the survivor's grasp (Figure 3-7B).
3. The RS can free his/her head with a combination of tucking the chin inward and hunching the shoulders. The survivor is then pushed away (Figure 3-7C).
4. The RS surfaces at a safe distance to reassess the situation.

### 3.4.3 Rear Head Hold Release

The rear head hold is perhaps the worst situation for a RS. The RS must quickly and correctly use the following procedures to avoid possible injury or drowning:

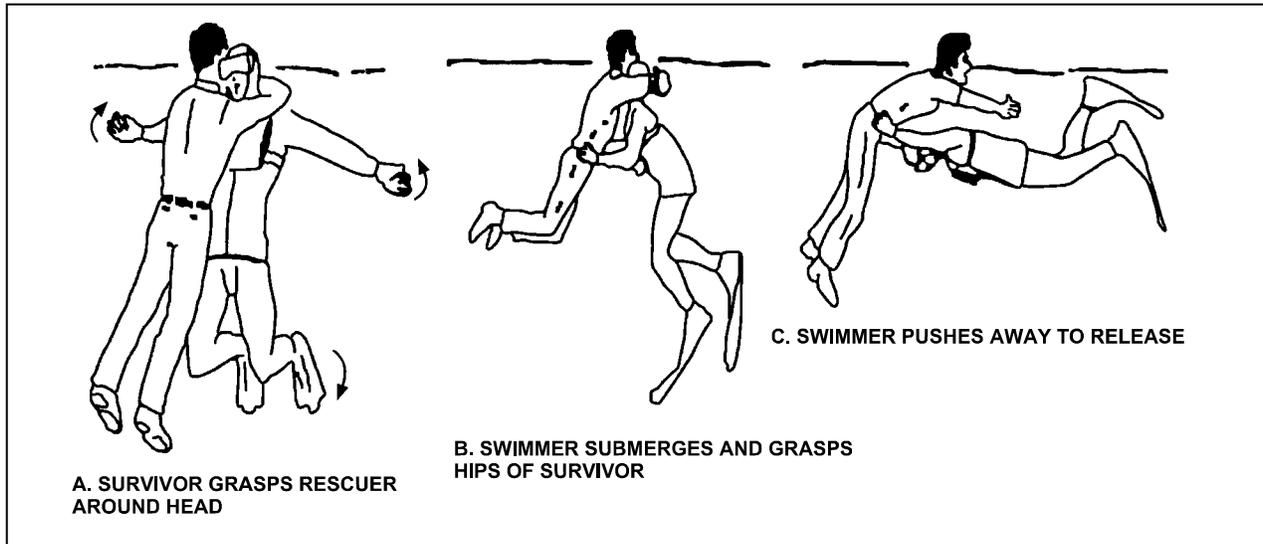


Figure 3-7. Front Head Hold Escape

1. As soon as the survivor's arms are felt encircling the head, the RS takes a quick "bite" or breath of air, and tucks chin down and to one side. The RS extends his/her arms outward, moving them rapidly upwards several times, which will produce downward movement, submerging the survivor and the RS (Figure 3-8A).
2. The RS places both hands on the survivor's wrist (either top or bottom), and pulls down toward the RS's hips, rotating the hand and sliding the other hand up to the survivor's elbow (Figure 3-8B and C).
3. With a combination of twisting inward and down on the survivor's wrist, and pushing the survivor's elbow upward (Figure 3-8D), the grip is released. The survivor's forearm is straight across the survivor's back, and the survivor is in front of the RS (Figure 3-8E).
4. From this position behind survivor, the RS shall place survivor in a controlled cross-chest carry.

#### 3.4.4 Rear Head Hold Escape

The rear head hold is perhaps the worst situation for a RS. The RS must quickly and correctly use the following procedures to avoid possible injury or drowning:

1. As soon as the survivor's arms are felt encircling the head, the RS takes a quick "bite" or breath of air, and tucks chin down and to one side. The RS extends his/her arms outward, moving them rapidly upwards several times, which will produce downward movement, submerging the survivor and RS (Figure 3-9A).
2. The RS brings the hands up to underside of each of the survivor's elbows. While keeping the chin tucked in and hunching the shoulders, RS pushes forcefully upward freeing the head (Figure 3-9B).
3. The survivor is then pushed back, away from the RS. The RS turns to face the survivor, prepared to prevent subsequent grasps.
4. The RS swims well out of reach of the survivor, surfaces, and reassesses the situation.

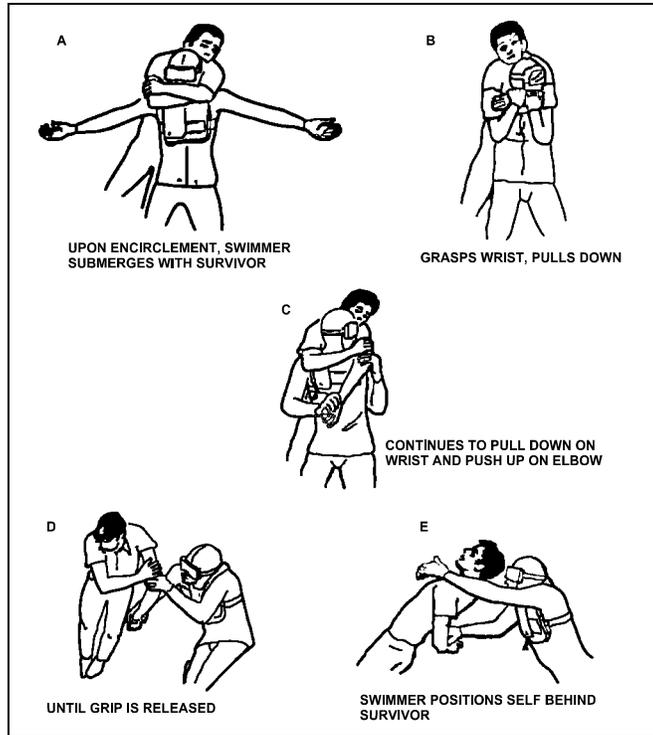


Figure 3-8. Rear Head Hold Release

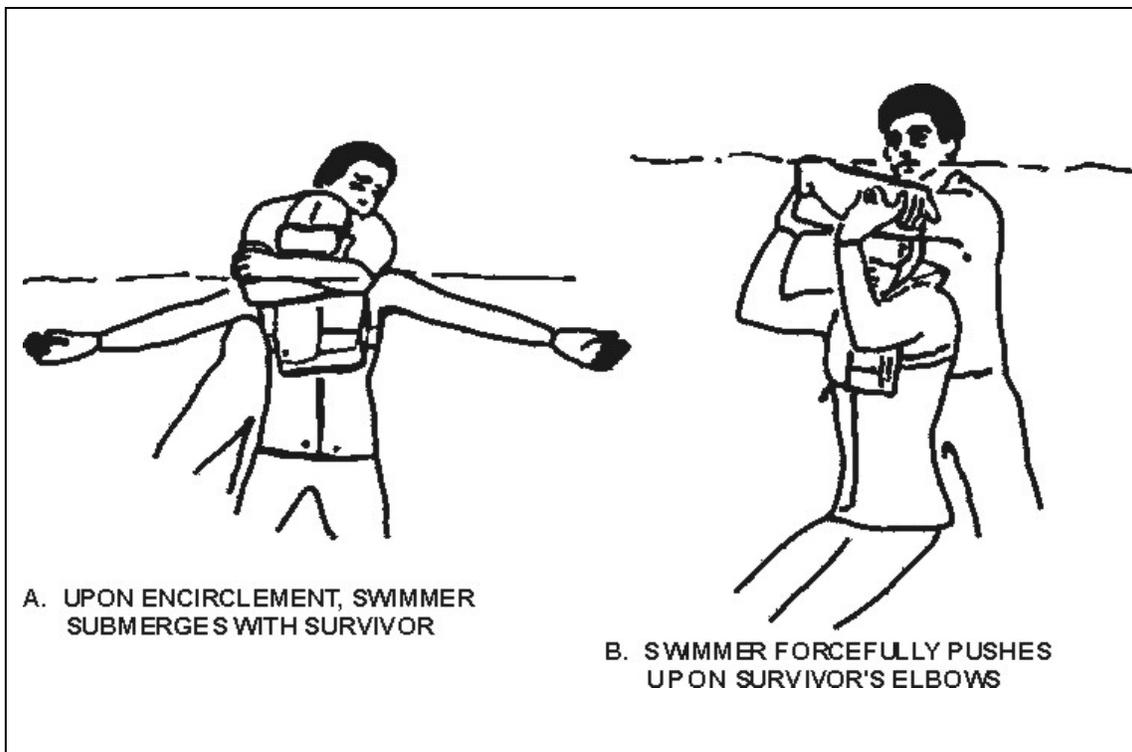


Figure 3-9. Rear Head Hold Escape

### 3.5 PARACHUTE-DISENTANGLEMENT PROCEDURES

Aviation personnel who have bailed out/ejected from their aircraft and are entangled in their parachutes present the RS with both the greatest challenge, and the greatest danger. Because of the various types and configurations of harnesses, fittings, and flotation devices, the RS shall maintain continuous training and proficiency in the use of all survival and parachute equipment being utilized by aviators. The NAVAIR 13-1-6 (series) publications discuss all equipment currently in use in greater detail. Additionally, SAR crews (station, carrier battle group [CVBG], and amphibious ready group [ARG]) should receive briefings from each aircraft squadron in the local area on the aircraft escape systems, aviators' survival equipment in use at least once a year, and prior to deployment.



Spinal immobilization is essential to ejection egress aircrew. Aircrew who eject from aircraft must be presumed to have spinal injuries. The RS should treat all survivors involved in an incident with a “high index of suspicion” (Chapter 7) as a probable head, neck, or spinal injury regardless of whether the survivor reports any pain or injury. Utilizing the rescue/SAR MEDEVAC litter for recovery is highly recommended to help prevent a potentially life-threatening or permanent neurological injury. In conjunction with use of the rescue/MEDEVAC litter, total spinal immobilization, including cervical collar, should be applied at the earliest convenience.

1. The RS shall never go underneath a parachute canopy. Both the RS and survivor could become trapped and drown should the canopy collapse and sink.
2. The parachute shall never be allowed to come between the RS and the survivor. The RS could lose sight of the survivor and/or become entangled in the parachute and/or suspension lines.
3. DD procedures shall not be used in any parachute-disentanglement rescue scenario.
4. When the survivor is entangled in a parachute that is submerged, the RS must act swiftly and efficiently in disentangling the survivor. A submerged parachute billowed and inflated with water current will pull personnel, rafts, and small boats under the water.

#### 3.5.1 Entanglement in Shroud Lines

The most common type of disentanglement situation occurs when the aviator is entangled in shroud lines, with the parachute canopy collapsed and partially or totally submerged. Specific procedures for shroud line removal can be found in Paragraph 3.7.7.

#### 3.5.2 Ballooned Canopy Procedures

If the survivor is covered with a ballooned (or deflated) parachute canopy, the RS shall use the following procedures:

1. While approaching the canopy, attempt to establish communications with the survivor.
2. Swim to the parachute edge closest to the survivor and opposite the apex of the parachute canopy (Figure 3-10).
3. Lift the edge of the parachute, pull shroud line(s) until the survivor is within reach and the canopy is gathered into the RS's hand (Figures 3-11 and 3-12).

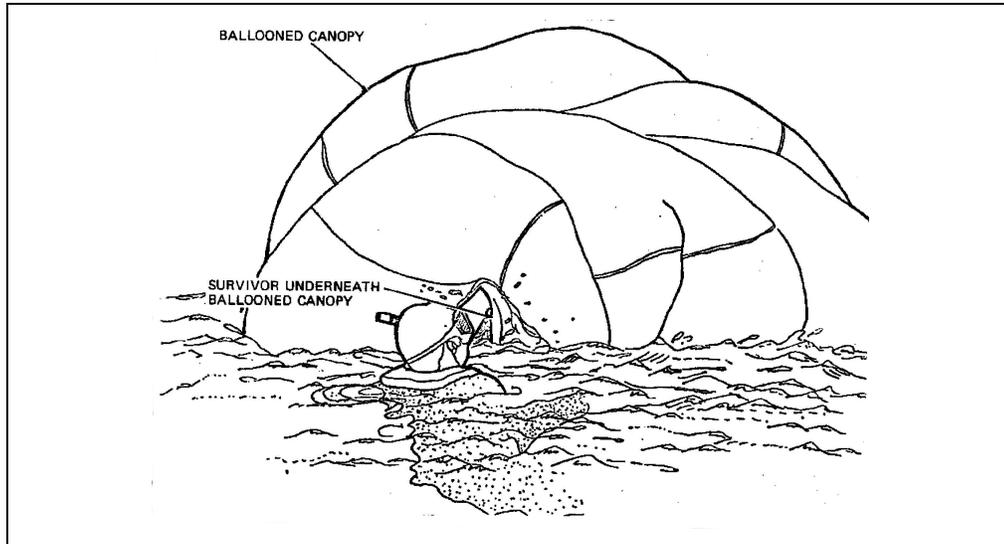


Figure 3-10. Attempt to Establish Communication with the Survivor

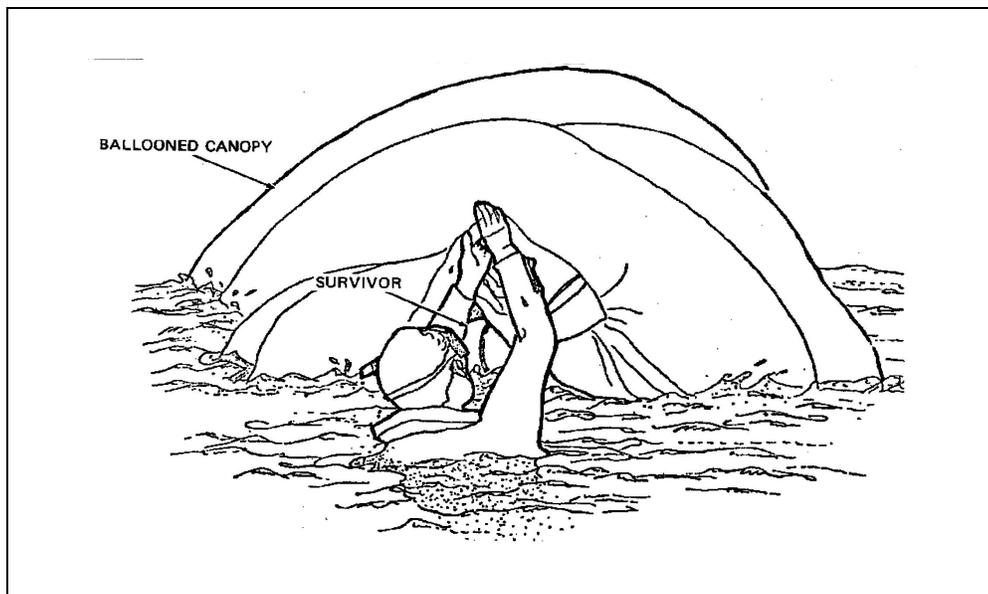


Figure 3-11. Lift the Edge of the Parachute

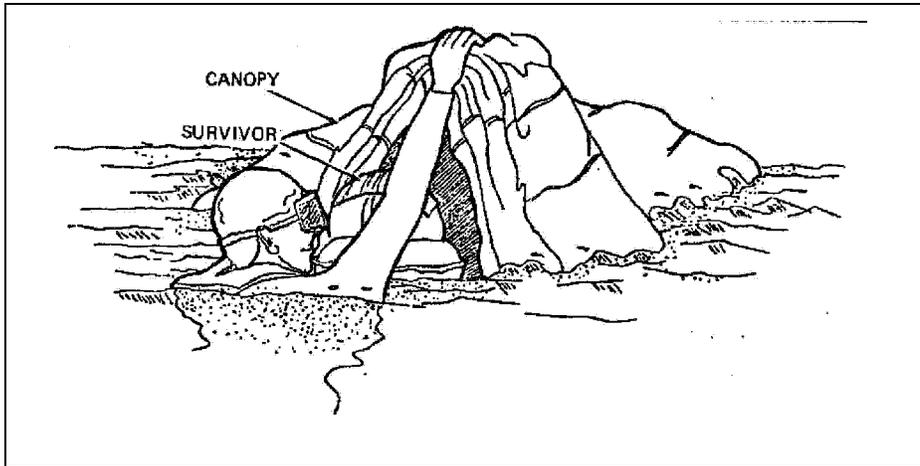


Figure 3-12. Pull Shroud Line(s) Until the Survivor Is Within Reach, and the Canopy Is Gathered into the RS's Hand



Prior to the RS taking physical control of a survivor, the RS shall take into account the type of injuries the survivor has communicated. *An unconscious survivor automatically communicates an injury to the head, neck, and spine.* The RS shall use only enough force as necessary to gain positive control of the survivor, being ever mindful of the RS's duty to prevent further injury to the survivor.

4. The RS uses his/her free arm to turn the survivor around (if required), and places a firm grip on back of the survivor's harness.
5. In one motion, pull the survivor back, and push the parachute over the survivor's head (Figure 3-13).
6. With the survivor out from under the parachute, continue to pull the survivor into the wind, and away from the parachute canopy.
7. When the survivor is towed well clear of the parachute canopy, use disentanglement/recovery procedures applicable to the type of harness the survivor is wearing (Paragraph 3.7).

### 3.5.3 Sinking Parachute

Should the survivor be entangled in a submerged parachute, and the RS comes to the conclusion that he/she will not be able to disentangle the survivor prior to the parachute pulling the survivor under water, the following procedures should be utilized.

#### Note

- The surface RS shall follow procedures established in Chapter 2, Paragraph 2.7.3.2.
- Use of the aviation RS's radio is critical, as it will greatly reduce the amount of time taken to communicate the RS's intentions.

## NTTP 3-50.1

1. The RS shall signal for assistance from a rescue boat, if available, using either the aviation RS's radio, and/or the hand signal found in (Chapter 6). If no rescue boat is immediately available, the RS shall signal the helicopter over into a hover position, directly over the survivor.
2. The RS will then attach the survivor's survival harness lifting device into the large rescue hook, and immediately continue disentanglement procedures.
3. The helicopter's rescue hoist shall be used to maintain the survivor's head above the water while the RS disentangles the parachute and readies the survivor for recovery.



The helicopter's hoist operator will adjust the hoist to compensate for hover variations and to maintain a steady hover over the survivor's position; under no circumstances shall the survivor be hoisted out of the water while any part of the parachute is still attached.

### Note

The RS may choose to unhook the survivor from the large rescue hook when the RS has completely disentangled the survivor from the sinking parachute. This will enable the RS to complete the required survivor recovery procedures IAW Paragraph 3.7.

## 3.6 RESCUE SWIMMER EMERGENCY PROCEDURES

### 3.6.1 Survivor Emergency Flotation Procedures

During the course of a rescue scenario, the RS may be faced with survivors with damaged or no flotation devices. If only one survivor has flotation problems, the RS may choose to complete the rescue without additional flotation devices for the survivor. When providing flotation to the survivor(s), the following procedures shall be used:

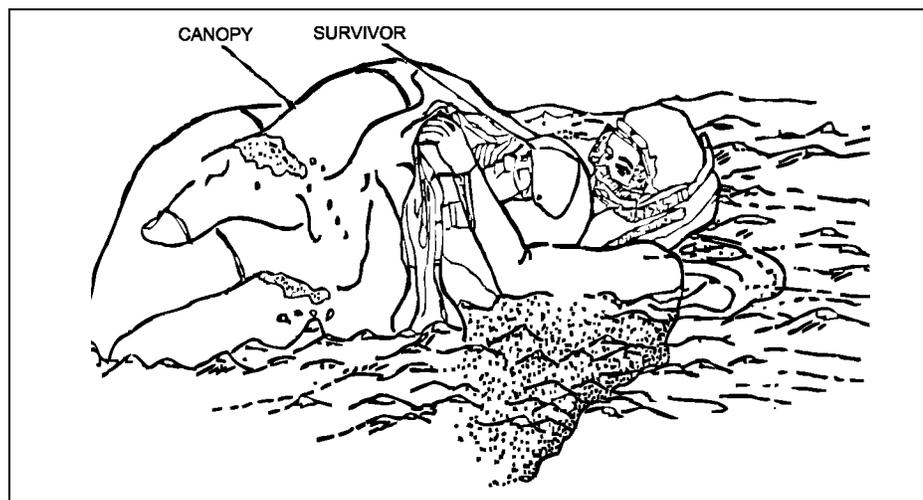


Figure 3-13. In One Motion, Pull the Survivor Back, and Push the Parachute over the Survivor's Head

### Note

- If the RS is wearing the TRI-SAR harness, the flotation cannot be removed. The RS shall signal the SRU for flotation (Chapter 6). The SRU should hoist down a personal flotation device, or deploy a raft to the RS. If the survivor has damaged/no flotation, the RS may give the survivor flotation using the procedures in Paragraphs 3.6.1.1 and 3.6.1.2.
- Prior to RS deployment, every attempt should be made to determine if the survivor has operable flotation. If it is determined that survivor(s) has no flotation, the survivor's flotation is inoperative, or the survivor's flotation status cannot be determined from the SRU, the RS should deploy with a personal flotation device, or one-man raft. The RS may be deployed via jump or hoist while holding a flotation device and should be placed as close to survivor(s) as possible to preclude excessive swimming.

#### 3.6.1.1 Cooperative Conscious Survivor with Damaged/No Flotation

1. If the RS chooses to give the survivor his/her personal flotation (LPU-28/P), the RS shall attempt to ascertain the survivor's level of cooperation. If the survivor is deemed cooperative, the RS:
  - a. Approaches the survivor using the Front Surface Approach, and establishes communications.
  - b. Upon reaching a distance of 6 to 8 feet from the survivor, executes a quick reverse.
  - c. Removes RS's mask, unclips and removes the LPU-28/P, and replaces mask.

### Note

- If time/the survivor's condition permits, the RS should inflate the LPU-28/P via the oral inflation tube — this will ensure the LPU-28/P is not overinflated, and fits over the survivor's head. This will also preclude the need to swap the survivor's flotation once aboard the SRU.
  - A fully inflated LPU-28/P may be difficult for some survivors to place over the head. In this instance, the RS may instruct the survivor on venting off some of the LPU-28/P's air. Once the survivor is in the RS's control, the RS can replace the air as necessary via the oral inflation tube, or by pulling beaded inflation lanyard.
  - The RS should not let go of the LPU-28/P back strap until completion of step "g."
- d. Inflate the LPU-28/P, hold onto the back strap, and pass it to the survivor.

### Note

- The RS should wait until the survivor has some source of flotation available prior to instructing them to remove their cranial, helmet, oxygen mask, etc.
  - The LPU-28/P will not fit over a cranial, or helmet. If the survivor is unable to tread water and remove their cranial/helmet, pass the survivor the LPU-28/P and instruct them to do so prior to attempting the donning of the LPU-28/P.
- e. Instruct the survivor to place the LPU-28/P over his/her head, with the pocket facing out.

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- f. While the survivor is donning LPU-28/P, the RS shall swim around to the right and behind survivor with the back strap in RS's right hand.
  - g. Place the left arm across the survivor's chest, under the flotation, and grasp the LPU-28/P's waist buckle. Fit the back strap around the survivor's back, and clip it into the waist buckle. Tighten the back strap.
  - h. Complete the rescue using normal disentanglement/recovery procedures in paragraph 3.7.
2. If the RS chooses to give the survivor an LPU-32/P from the SRU the RS shall attempt to ascertain the survivor's level of cooperation. If the survivor is deemed cooperative, the RS:



### WARNING

- The LPU-32/P is not designed for use as SAR equipment. Due to its design, the RS will be limited in its use on a survivor.
- Never inflate the LPU-32/P prior to fitting it on a survivor. Due to the design of the oral inflation tubes, it is extremely difficult to vent off air as needed to fit it over the survivor's head.

### Note

The NA 13-1-6.1-2 authorizes a 12-inch extension belt for the LPU-32/P waist belt. Both the SRU crew and the RS should ensure that the 12-inch extension belt is present on the deployed LPU-32/P for ease of fitting it to the survivor.

- a. Approaches the survivor using the Front Surface Approach, and establishes communications.
- b. Upon reaching a distance of 6 to 8 feet from the survivor, executes a quick reverse.

### Note

The RS should not let go of the LPU-32/P back strap until completion of step "f."

- c. While holding onto the back strap:
  - (1) Unzip the LPU-32 all the way to help the survivor fit it over his/her head.
  - (2) Pass it to the survivor.

### Note

An LPU-32/P that is not inflated and fully unzipped should fit over a cranial, or helmet. If the survivor is unable fit the LPU-32/P over his/her head, instruct them to remove their cranial/helmet and retry.

- d. Instruct the survivor to place the LPU-32/P over his/her head; as the LPU-32/P is completely reversible, it does not matter which side is facing out.

### Note

For step “e” the RS will have to determine which side of the survivor the waist buckle is on. For example, if the waist buckle is on the RS’s left side (facing the survivor), the RS shall swim around to the right of the survivor with the back strap in the RS’s right hand. Reverse as necessary.

- e. While the survivor is donning LPU-32/P, the RS shall swim around behind the survivor with the back strap in RS’s appropriate hand.
- f. Place the appropriate arm across the survivor’s chest, under the flotation, and grasp the LPU-32/P’s waist buckle. Fit the back strap around the survivor’s back, and clip it into the waist buckle. Tighten the back strap.



### WARNING

Failure to inflate both lobes of the LPU-32/P will result in the survivor floating low in the water, and may cause the survivor to ingest water and/or drown.

- g. Inflate the LPU-32/P by pulling both beaded handles.
  - h. Complete the rescue using normal disentanglement/recovery procedures in Paragraph 3.7.
3. If the RS chooses to give the survivor an LRU-18/U life raft from the rescue platform, the RS shall:



### WARNING

- Upon approaching the survivor, the RS shall attempt to ascertain the survivor’s level of cooperation. If the survivor is deemed cooperative, the RS shall:
- The LRU-18/U shall never be used as a flotation device on an unconscious survivor, or a survivor with a suspected head, neck, or spine injury.

### Note

The LRU-18/U life raft has a single beaded CO2 inflation activation lanyard and two oral inflation valves (red). When pulled, the CO2 cartridge fills the top four lobes of the life raft only. This is to make embarkation of the life raft easier. The bottom five lobes of the LRU-18/U are inflated manually via the uppermost oral inflation tube. The bottom oral inflation tube controls the top four lobes.

- a. Approach the survivor using the Front Surface Approach, and establish communications.
- b. Upon reaching a distance of 6 to 8 feet from the survivor, execute a quick reverse.

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- c. While holding on to the carry straps, pull the beaded handle to inflate the LRU-18/U.

### Note

The RS should not let go of the LRU-18/U tending line until completion of step “d.”

- d. Push the life raft to the survivor, and instruct the survivor to board the life raft:
  - (1) Once safely aboard, the RS can instruct the survivor to inflate the bottom half of the LRU-18/U via the upper oral inflation tube.
- e. If the survivor is unable to board the LRU-18/U under his/her own power, the RS can assist using the following steps:

### Note

The RS should not let go of the LRU-18/U tending line until completion of step “2.”

- (1) The RS puts the survivor in a left arm cross-chest carry or equipment/collar tow.

### Note

The RS should be in between the life raft and the survivor.

- (2) The RS shall grab the LRU-18/U with his/her right hand approximately 1/3 of the way down the length from the head of the life raft.
  - (3) Pull down forcefully on the life raft and simultaneously pull the survivor across your body into the life raft. Continue this until the survivor’s head and torso are positioned inside the LRU-18/U.
  - (4) Without letting go of the life raft, slide down to the survivor’s feet and push them inside the life raft.
  - (5) Assist the survivor in maneuvering around inside the life raft until the survivor is in the most stable position possible.
  - (6) Instruct the survivor on how to blow up the bottom portion of the life raft using the upper most oral inflation tube (as desired).
- f. Complete the rescue using normal disentanglement/recovery procedures in Paragraph 3.7.

### 3.6.1.2 Unconscious Survivor with Damaged/No Flotation

1. When the RS chooses to give up their personal LPU-28/P to an unconscious survivor with damaged/no flotation, the RS shall:
  - a. Approach the survivor using the Front Surface Approach and attempt to establish communications/determine unresponsiveness.
  - b. Upon reaching a distance of an arm’s length from the survivor, execute a quick reverse.
  - c. Remove RS’s mask, unclip and remove LPU-28/P, and replace mask.

**Note**

It may be difficult to fit a fully inflated LPU-28/P over some survivor's heads. In this instance, the RS may vent off some of the LPU-28/P's air. Once the LPU-28/P is over the survivor's head, the RS can replace the vented air via the oral inflation tube, and continue donning procedures.

- d. Inflate the LPU-28/P. The RS shall then place his/her right arm through the LPU-28/P neck hole, pocket facing in.
- e. Use front surface approach procedures, and put the survivor into a cross-chest carry.

**Note**

Remove the survivor's oxygen mask/helmet/cranial if applicable.

- f. Place the LPU-28/P over survivor's head with pocket facing out. This is done with RS's right arm, while keeping the survivor in a left-hand cross-chest carry.
- g. Place the left hand across the survivor's chest, under the flotation, and grasp the LPU-28/P's waist buckle. Fit the back strap around the survivor's back and clip it into the waist buckle. Tighten the back strap.



Lack of respiratory function (breathing) is a life-threatening condition. If the survivor is not breathing, the RS shall give two rescue breaths to the survivor, safely complete all applicable disentanglement/recovery procedures, and signal the SRU for immediate recovery of the survivor. After the completion of applicable disentanglement/recovery procedures, the RS shall continue rescue breathing for the survivor.

- h. Check for breathing:
  - (1) If the survivor is speaking, breathing is present.
  - (2) Visually check the survivor's mouth and/or nose.
  - (3) Feeling for breath using the side of the RS's face or bare hand.
  - (4) Putting the RS's mask under the survivor's mouth/nose and check for fogging.
- i. If breathing isn't present, or can't be confirmed, give the survivor two rescue breaths by slightly tilting head and pinching nose.



Use of the rescue/MEDEVAC litter is the first choice of recovery devices for an unconscious survivor. The only exceptions would be that the survivor has immediate life-threatening injuries (no breathing, severe arterial bleeding), or extraordinary environmental conditions exist that prohibit rescue/MEDEVAC litter use.

- j. Continue with survivor disentanglement/recovery procedures (Paragraph 3.7).
2. When the RS chooses to utilize an LPU-32/P (from the SRU) on an unconscious survivor with damaged/no flotation, the RS shall:

**Note**

The NA 13-1-6.1-2 authorizes a 12-inch extension belt for the LPU-32/P waist belt. Both the SRU crew and the RS should ensure that the 12-inch extension belt is present on the deployed LPU-32/P for ease of fitting it to the survivor.

- a. Approach the survivor using the Front Surface Approach and attempt to establish communications/determine unresponsiveness.
- b. Upon reaching a distance of an arm's length from the survivor, execute a quick reverse.

**Note**

- The LPU-32/P is not designed for use as SAR equipment. Due to its design, the RS will be limited in its use on a survivor.
  - Never inflate the LPU-32/P prior to fitting it on a survivor. Due to the design of the oral inflation tubes, it is extremely difficult to vent off air as needed to fit it over the survivor's head.
  - An LPU-32/P that is not inflated and fully unzipped should fit over a cranial, or helmet.
- c. Unzip the LPU-32/P.

**Note**

The RS should place the LPU-32/P over the arm with the waist buckle forward; this will allow the RS to easily fit it to the survivor with the waist buckle on the survivor's right side. This will allow the RS to clip the back strap into the waist buckle without having to switch arms or twist the waist belt assembly.

- d. The RS shall place his/her right arm through the LPU-32/P neck hole.
- e. Use Front Surface Approach procedures and put the survivor into a cross-chest carry.

**Note**

Remove the survivor's oxygen mask/helmet/cranial as needed.

- f. Place the LPU-32/P over the survivor's head. This is done with RS's right arm, while keeping the survivor in a left-hand cross-chest carry.
- g. Place the left hand across the survivor's chest, under the flotation, and grasp the LPU-32/P's waist buckle. Fit the back strap around the survivor's back, and clip it into the waist buckle. Tighten the back strap.

**WARNING**

Failure to inflate both lobes of the LPU-32/P will result in the survivor floating low in the water, and may cause the survivor to ingest water and/or drown.

- h. Zip up the LPU-32/P.
- i. Inflate the LPU-32/P by pulling both beaded handles.

**WARNING**

Lack of respiratory function (breathing) is a life-threatening condition. If the survivor is not breathing, the RS shall give two rescue breaths to the survivor, safely complete all applicable disentanglement/recovery procedures, and signal the SRU for immediate recovery of the survivor. After the completion of applicable disentanglement/recovery procedures, the RS shall continue rescue breathing for the survivor.

- j. Check for breathing:
  - (1) If the survivor is speaking, breathing is present.
  - (2) Visually check the survivor's mouth, and/or nose.
  - (3) Feeling for breath using the side of the RS's face or bare hand.
  - (4) Putting the RS's mask under the survivor's mouth/nose, and checking for fogging.
- k. If breathing isn't present, or can't be confirmed, give the survivor two rescue breaths by slightly tilting head and pinching nose.



Use of the rescue/MEDEVAC litter is the first choice of recovery devices for an unconscious survivor. The only exceptions would be that the survivor has immediate life-threatening injuries (no breathing, severe arterial bleeding), or extraordinary environmental conditions exist that prohibit rescue/MEDEVAC litter use.

1. Continue with survivor disentanglement/recovery procedures (Paragraph 3.7).

### 3.6.2 “Safing” the Survivor

During the course of a rescue, the RS may determine that there is a need to physically disengage from the survivor prior to completing the rescue/recovery of that survivor into the SRU. Once the RS begins disentanglement/recovery procedures on a survivor, the RS shall not physically disengage from that survivor unless that survivor has been “safed.” For the purposes of this manual, this action will be termed “safing the survivor.” Some examples of situations where the RS may decide to “safe” and disengage from a survivor prior to completion of the recovery are:

1. There are mixed survivors such as mishap helicopter aircrew and passengers/troops.
2. The RS needs to recover and inflate life rafts/flotation devices deployed by the SRU.
3. The medical or survival equipment condition of another survivor suddenly degrades to a point in which that survivor needs immediate assistance.

The following conditions shall be met before the survivor is considered “safe:”

1. The survivor is breathing and has no apparent, immediate, life-threatening injuries.
2. The survivor is wearing operable flotation, or is in an operable life raft.
3. The survivor is completely free of entanglement, and not attached to a parachute.
4. If at night, the RS should attach a lighting device to survivor (strobe light, chemical light, etc.).

Listed below are some conditions that would preclude the RS from disengaging from a survivor prior to rescue completion. This list is not all-inclusive:

1. If rescuing the survivor would be quicker than “safing” them.
2. If the survivor has apparent, immediate, life-threatening injuries (not breathing, or bleeding severely, etc.).
3. Environmental concerns such as sea predators, heavy seas, temperature, restricted visibility, etc.

### 3.6.3 Staging Survivors in Life Rafts (Aviation RS Only)

Single or multiplace life rafts make excellent staging areas for multiple-survivor rescue scenarios. In the event of a multiple rescue in which numerous survivors are at the rescue scene, and the helicopter has a multiplace life raft available, the RS shall:

**Note**

- Refer to Chapter 1, Paragraph 1.6 for helicopter life raft deployment information.
  - The CC and RS personnel shall be thoroughly familiar with single and multiplace life raft operating procedures. General information on single and multiplace life rafts can be found in Chapter 8 of this manual. Detailed information can be found in the NAVAIR 13-1-6.1.1.
1. Signal to helicopter to deploy a life raft via radio or hand signal (Chapter 6).
  2. Swim to deployed raft or rescue hook with raft attached. Disconnect from rescue hook and inflate (if applicable).
  3. Once raft is inflated, right the raft if it is upside down.

**Note**

- If more than one life raft is used, every effort shall be made to tether the life rafts to each other.
  - If severely injured survivors are identified, the RS shall take immediate action to rescue those survivors first.
4. Instruct/assist survivors to board or hold onto raft.
  5. If possible, the RS should instruct the survivors on the recovery plan of action:
    - a. The rescue order — who will be rescued, first to last
    - b. How the survivors will be transferred to the SRU
    - c. Any safety precautions for the rescue device to be used:
      - (1) During ingress/hookup of the rescue device
      - (2) During the hoisting evolution
      - (3) During transition into the SRU, to include not assisting or attempting egress from the rescue device until ordered by the CC.

**Note**

If the helicopter is equipped with a rescue net, two survivors may be removed from the raft and towed to the rescue net simultaneously.

6. Extract the survivors one at a time from the life raft using procedures outlined in Paragraph 3.7.8 of this chapter. Help the survivors swim far enough away from the life raft so that rotor wash does not affect the remaining survivors in the life raft, and signal to the SRU to deploy the selected rescue device.



In all cases (whether the survivor is determined to be panicked, combative, or cooperative) the RS shall not hoist survivors from an overland or maritime environment without the proper application of the selected rescue device to include safety straps or safety devices outlined in this manual.

7. Utilize the selected rescue device IAW Paragraph 3.9.

### 3.6.4 Uncooperative Survivor

1. U.S. naval RSs are sometimes faced with situations where the survivor can be categorized as uncooperative. Uncooperative survivors can be categorized into two distinct types: panicked and combative.
2. A panicked survivor normally desires to be rescued, but is in an uncomfortable or unfamiliar environment, and is usually so frightened of drowning that they could pose a danger to the RS and themselves. Calming a panicked survivor can usually be accomplished by verbal assurances from the RS and/or being provided with flotation. Once the panicked survivor has been calmed down and is willing to be rescued, utilize the appropriate rescue procedures outlined in this chapter.
3. A combative survivor may not initially desire to be rescued, and may actively resist assistance from the RS. The combative survivor may intentionally try to harm the RS and/or themselves when approached. This type of behavior can continue indefinitely, even after repeated attempts by the RS to provide assurance and recovery. Indications that a survivor might be combative are:
  - a. Prior mentally unstable behavior, suicide attempt, voluntarily jumping into the water.
  - b. Suspected or known enemy, foreign personnel demonstrating hostility toward Americans, or suspicious personnel aboard vessels being detained.

#### 3.6.4.1 Combative Survivor Procedures



- RSs shall not be deployed into the water to recover enemy or hostile survivors armed with weapons.
- The recovery of enemy or hostile survivors should only be attempted using a rescue boat or ship's J-Bar davit with armed security personnel on station in the rescue boat or ship's forecastle. Helicopter recovery of an enemy or hostile survivor should only be used under conditions of operational necessity.



- DD procedures should not be used on a combative survivor. If DD procedures are utilized, the RS shall be deployed to a safe distance from the survivor (6–8 feet). If the RS determines that the survivor is going to remain combative, the RS should disconnect from the rescue hook, reattach the quick strop to the large rescue hook and signal the CC “raise cable.” Combative survivor procedures should then be utilized.
  - A single RS should not attempt the recovery of a combative survivor without assistance from a rescue boat and/or a second RS.
1. Approach the survivor and attempt to establish verbal communication. Attempt to calm the survivor with verbal reassurance and/or commands.
  2. If the survivor is actively combative, do not attempt to immediately gain physical control of the survivor. The RS should remain at a safe distance (6–8 feet) from the survivor, and continue to assess the situation.
  3. If the survivor does not have operable flotation, the RS should attempt to provide a flotation device (LPU-28/P, life raft, or personal flotation device from the SRU) to the survivor while still maintaining a safe distance.
  4. Communicate with the SRU and brief the situation.
  5. Request assistance utilizing aviation RS’s radio, and/or hand signal:
    - a. “Request rescue boat assistance” (Chapter 6).
    - b. “Request the assistance of a second RS” (Chapter 6). The second RS is a backup to the primary RS, and has the following responsibilities:
      - (1) Ensuring the safety of the primary RS.
      - (2) Assuming control of scene as the primary RS, as needed.
      - (3) Deploying with any rescue equipment requested by the primary RS.
      - (4) Assuming/helping with communication duties to the SRU(s), once on scene.
      - (5) Assisting the primary RS as required.
- Note**
- There are no dual RS procedures for combative survivors. The backup RS should act as a safety observer and assist the primary RS as required.
6. Use the following modified recovery procedures:
    - a. Maintain 6–8 feet distance from the survivor, remain vigilant (ready to render immediate assistance), and wait for the survivor to tire, calm down, or ask for assistance.

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- b. Be patient. Attempt to calm the survivor and provide flotation to the survivor if needed.
- c. Assume physical control of the survivor only when deemed safe. Do not attempt to rescue an actively combative survivor unless the following conditions occur:
  - (1) The survivor requests assistance
  - (2) The survivor becomes unconscious/incapacitated.
- d. Ensure the survivor has no weapons:
  - (1) If conscious, direct the survivor to maintain hands in view at all times.
  - (2) Once physical control is established, the RS shall remain vigilant for the survivor to become actively combative or the presence of any weapons.
- e. Recover the survivor using appropriate procedures for the device chosen.

### 3.6.4.2 Combative Survivor Recovery to the SRU

1. The rescue boat or ship's forecastle is the preferred recovery vehicle. If a rescue boat or ship is unavailable, recovery may be made to a helicopter.



In all cases (whether the survivor is determined to be panicked, combative, or cooperative) the RS shall not hoist survivors from an overland or maritime environment without the proper application of the selected rescue device to include safety straps or safety devices outlined in this manual.

- a. Rescue strop:
  - (1) The RS shall fit the survivor with the rescue strop as outlined in Paragraph 3.9.2.
  - (2) The RS shall correctly employ the arm retaining straps prior to communicating the “raise cable” signal via the aviation RS's radio and/or hand signal (Chapter 6).
- b. Direct deployment:
  - (1) Shall only be used by RSs qualified in DD procedures IAW OPNAVINST 3130.6 (series). The QS shall only be used in conjunction with the TSH.
  - (2) The RS shall always correctly employ the QS crotch strap prior to communicating the “raise cable” signal via the aviation RS's radio and/or hand signal (Chapter 6).

### 3.6.4.3 Care and Control of a Combative Survivor onboard a SRU

1. The SRU shall notify the OSC of the situation, the survivor's condition, and request medical and security personnel assistance at SRU recovery location.

2. The SRU crew shall remain vigilant during transit. A member of the SRU crew, or security personnel shall be stationed next to survivor at all times during transit to provide immediate physical control if required.



Restraints will preclude the survivor from being able to egress/swim in the event of an aircraft mishap or rescue boat capsizing during transit. Rescue personnel may need to provide assistance to the survivor to egress the SRU in the event of a mishap.

3. Once aboard the SRU, the survivor should be secured into a rescue/MEDEVAC litter at the earliest opportunity. If aboard a helicopter, cabin doors and windows should be secured.
4. Rescue personnel shall assess condition of survivor and provide medical treatment during transit.
5. Once the SRU is safely aboard ship or ashore, a member of the SRU crew shall transfer the survivor to awaiting medical and/or security personnel.

### **3.7 SURVIVOR DISENTANGLEMENT/RECOVERY PROCEDURES**

The following recovery procedures (Paragraphs 3.7.1 through 3.7.15) are the foundation of United States Naval Rescue Swimmer training and shall be used for all survivors encountered. These procedures are applicable to all survivors (aviator, nonaviator, military, and civilian) and all applicable steps shall be utilized in the order found below, always starting with 3.7.1 and always ending with 3.7.15.

#### **3.7.1 Assess the Situation**

Assessing the situation begins in the SAR recovery unit (SRU) en route to the rescue scene. The entire rescue crew should assess the situation and formulate tactics for the rescue based upon the following information:

1. Number/type of survivor(s):
  - a. Military or civilian.
2. Location of survivors, their relation to, and distance from, each other and the SRU.
3. Visible and/or known injuries of the survivor(s):
  - a. Mechanism of injury (Chapter 7)
  - b. Conscious/unconscious
  - c. Visible bleeding
  - d. Environmental injuries (Chapter 7)
  - e. Broken bones.
4. Flotation devices inflated/not inflated/survivor face down in water.

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5. Parachute entanglement problem/presence of a ballooned parachute.
6. Day or night/sea state/wind direction/water temperature.
7. Cooperative/uncooperative/combative survivor(s).
8. Fuel in the water.
9. Debris littering scene, and its relation to the survivor.
10. Presence of sea predators.
11. Feasibility of attempting multiple/single rescue.
12. Rescue order established according to apparent injuries. The survivor with the worst injuries shall be rescued first.
13. RS deployment options.
14. Other available SRUs and RSs.

### **3.7.2 Establish Communication**

1. If the survivor(s) are known to have a radio, the SRU crew shall attempt to communicate with the survivor(s) via radio prior to RS deployment.

#### **Note**

- The aviation RS shall deploy with a radio IAW Paragraph 5.2.1. Radio communication between the RS and the SRU is essential should the rescue situation significantly change from the original assessment.
  - The aviation RS shall communicate via radio with the SRU for all situations in which a hand/light signal will not effectively convey the RS's intentions with regard to rescue tactics and/or recovery method.
  - One member of the SRU crew shall maintain continuous visual contact with the RS at all times while the RS is in the water.
  - Every SRU present at the rescue scene shall monitor the assigned primary radio frequency (normally 282.8 MhZ) of the aviation RS at all times, until all personnel including the RS are recovered.
2. After RS deployment, the RS shall signal the SRU "I am alright" via hand signal (Chapter 6):
    - a. The aviation RS shall conduct a radio check with the helicopter.
  3. The RS will then approach the survivor. During the approach, the RS shall have his/her head up and eyes on the survivor. The RS shall attempt to establish verbal and/or visual communication with the survivor.



### WARNING

Prior to the RS taking physical control of a survivor, the RS shall take into account the type of injuries the survivor has communicated. *An unconscious survivor automatically communicates an injury to the head, neck, and spine.* The RS shall use only enough force as necessary to gain positive control of the survivor, being ever mindful of the RS's duty to prevent further injury to the survivor.

### Note

During the approach, the RS shall continue to assess the situation, and the condition of the survivor(s), including any injuries the survivor(s) communicate to the RS.

### 3.7.3 In Close, In Control

Using the appropriate approach outlined in Paragraph 3.2 of this chapter, the RS shall approach the survivor and attempt to gain physical control of the survivor to begin recovery/disentanglement procedures and injury assessment. Maintaining physical control of a survivor throughout the rescue scenario is paramount. The RS maintains physical control of a survivor by either utilizing the cross-chest carry or equipment/collar tow, or by general physical handling during disentanglement/recovery procedures. The RS may also hook the RS's harness snap hook (aviation RS only) into the survivor, or grasp the survivor's body with their legs to free the RS's hands for use. Using either a cross-chest carry or equipment/collar tow (Paragraph 3.3), pull the survivor into the wind and away from the parachute canopy (if present), any debris, etc.



### WARNING

The RS shall continuously check that the survivor is breathing per Chapter 7, and assess the survivor's injuries throughout the rescue evolution.

### Note

The RS shall attempt to grasp the survivor using established approaches, carries, escapes, and releases IAW Paragraphs 3.2 through 3.4 of this chapter.

### 3.7.4 Remove Oxygen Mask/Check for Breathing

### Note

If the survivor is still wearing an oxygen mask attached by both bayonet fittings, this may indicate shock, unconsciousness, or other injuries, which preclude the survivor from removing the mask on their own. This may indicate a need for immediate recovery and advanced medical care.

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1. Completely remove the oxygen mask from the survivor's helmet by removing both bayonet-type fittings, and pulling the mask away from the survivor's face. *Do not attempt any other disentanglement procedure until the survivor is checked for breathing* (Figure 3-14).

### Note

- Currently there are two types of oxygen mask release fittings in use. They are both bayonet-type fittings, and look similar.
  - The old-style bayonet fittings (Figure 3-15) are released by pushing the tab releases located on the sides of the mask away from the survivor's face.
  - The new type of bayonet fittings can be recognized by a black cover over the position of the old-type release tabs (Figure 3-16). To release the new-type bayonet fittings, push the release button and pull the mask away.
2. Immediately after removal of the oxygen mask from the helmet, check for breathing:
    - a. If the survivor is speaking, breathing is present.
    - b. Visually check the survivor's mouth and/or nose.
    - c. Feeling for breath using the side of the RS's face or bare hand.
    - d. Putting the RS's mask under the survivor's mouth/nose and check for fogging.
  3. If breathing can't be confirmed, then give two breaths by slightly tilting head and pinching nose.



### WARNING

Lack of respiratory function (breathing) is a life-threatening condition. If the survivor is not breathing, the RS shall give two rescue breaths to the survivor, safely complete all applicable disentanglement/recovery procedures, and signal the SRU for immediate recovery of the survivor. After the completion of applicable disentanglement/recovery procedures, the RS shall continue rescue breathing for the survivor.

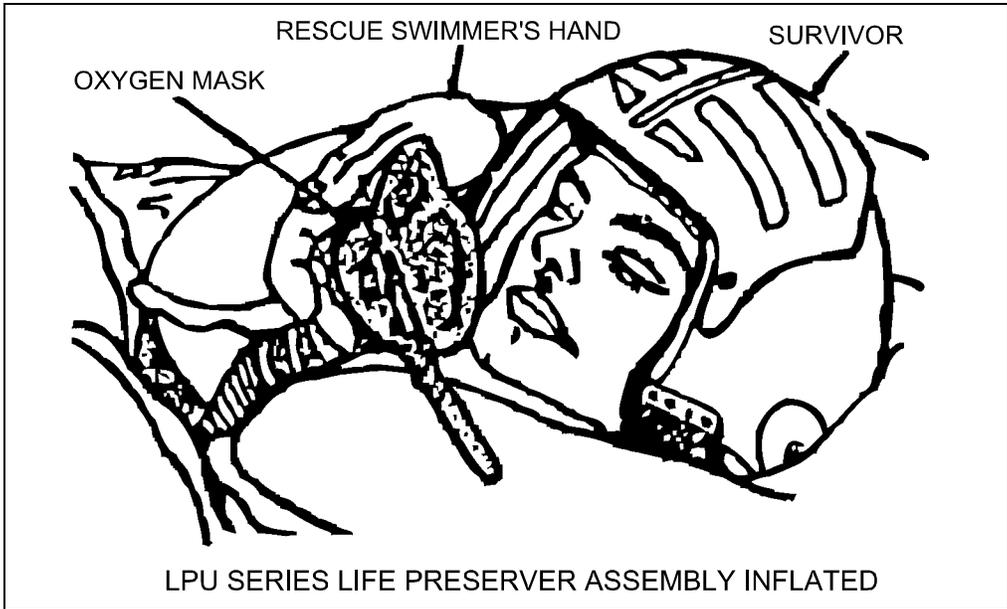


Figure 3-14. Remove Oxygen Mask/Check for Breathing

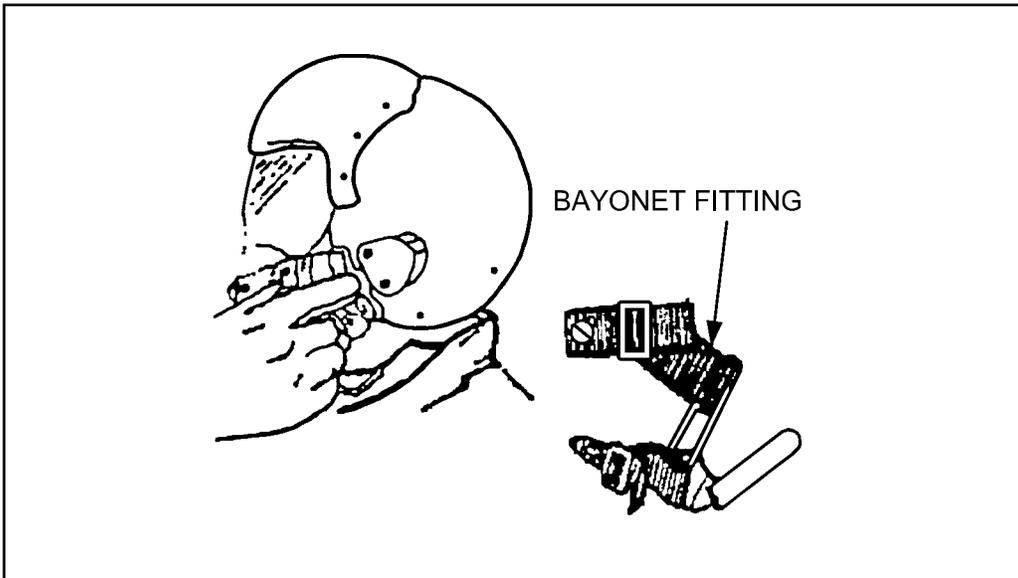


Figure 3-15. "Old-Style" Bayonet Fittings



Figure 3-16. “New-Style” Bayonet Fittings

### 3.7.5 Clear the Survivor’s Head, Neck, and Chest

1. Clear all obstructions, shroud lines, and raft lanyard (if applicable) (Figure 3-17).
2. Check for injuries to the survivor both visually and by feeling for deformities. If any injuries are discovered that interfere with airway, breathing, and/or circulation (ABCs) and/or may be considered life threatening, the survivor should be recovered by the fastest means possible. Examples of life-threatening injuries that may be assessed by a RS in the water are:
  - a. No breathing
  - b. Severe bleeding.

#### Note

- Quick fitting harnesses: There are two types of quick-fitting harnesses (USN and USAF) using two different parachute configurations. Both quick fit harnesses can accommodate either the backpack or chest pack–type parachute systems.
- Both the United States Navy (USN) and United States Air Force (USAF) quick fitting harnesses utilize the same quick ejector fittings. One fitting is located on the chest strap, and one on each leg strap. To release the quick ejector fittings, pull up on the lever (Figure 3-18). The USAF quick fitting harness incorporates a J-1 Fitting (Figure 3-18) on each shoulder strap, which releases the deployed parachute from the harness.

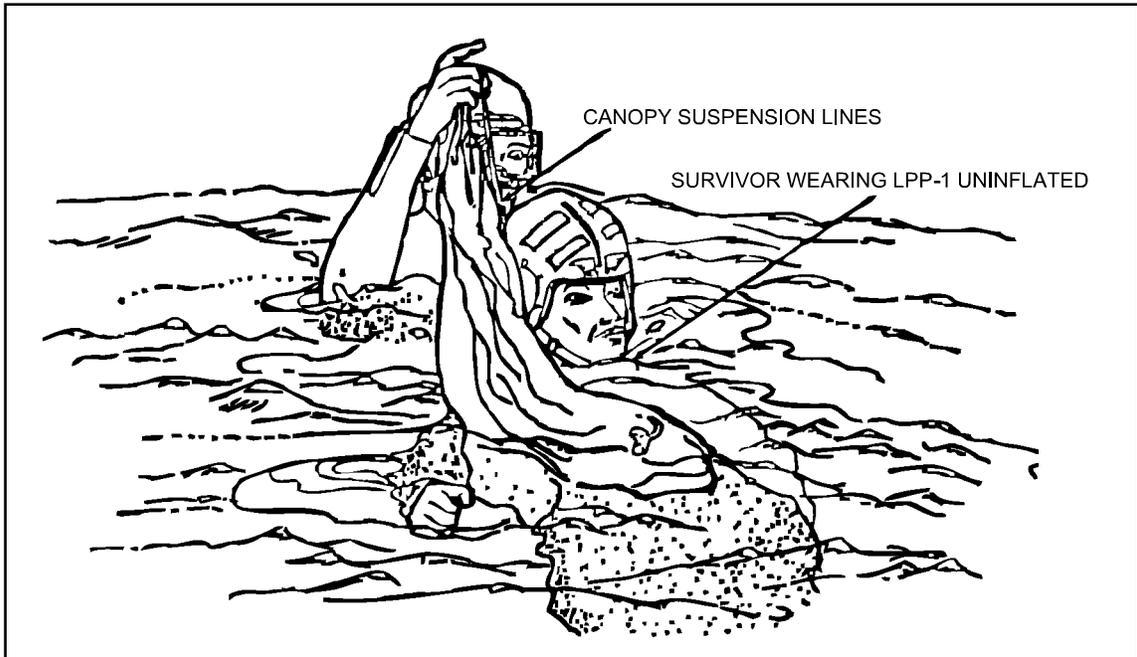


Figure 3-17. The RS Clears All Obstructions and Shroud Lines from Survivor’s Head, Neck, and Chest

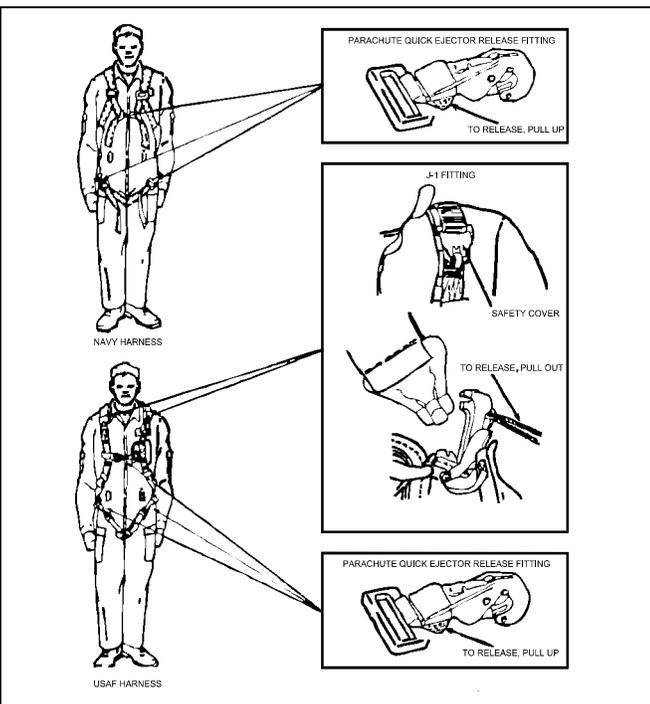


Figure 3-18. U.S. Navy Quick Fit Harness (top); USAF Quick Fit Harness (bottom)



When utilizing a quick fitting harness, the survivor may be wearing the LPP-1/1A or LPU-32/P flotation device; therefore, the RS shall disconnect the chest quick ejector snap before inflating the survivor's personal flotation device (Figure 3-19). Inflating the LPP-1/1A or LPU-32/P before disconnecting the chest quick ejector snap could severely injure, or even crush, the survivor's chest. This warning applies to all quick fitting harnesses that utilize a chest quick ejector snap.

3. USN/USAF quick fitting harness with backpack includes:
  - a. Release the quick ejector snap on the center of the survivor's chest (Figure 3-19).
4. USN/USAF quick fitting harness with chest pack includes:

**Note**

- Either the right or left side of the chest pack could be safety-pinned, making it difficult to release.
  - Do not release both sides of the chest pack parachute assembly. Release one side only.
- a. Disconnect one spring snap on the chest pack parachute assembly to give access to the chest quick ejector snap.
  - b. Release the quick ejector snap on the center of the survivor's chest (Figure 3-19).

**3.7.6 Inflate the Survivor's Personal Flotation Device**



- When any type of aviator helmet is worn in conjunction with the LPP-1/1A or LPU-32/P life preserver, do not inflate the life preserver until the helmet chinstrap is loosened, or the helmet is removed. Failure to loosen the chinstrap may cause the chinstrap to block the survivor's airway due to the flotation assembly pushing up on the helmet.
- The RS shall make every attempt to ascertain the condition of the survivor's flotation prior to deploying. Regardless of the type of RS harness used, it is always good practice to deploy with an additional personal flotation device for the survivor (if needed). The benefits of deploying with an additional personal flotation device are two-fold: safety — the RS will not have to give up his/her flotation to the survivor, and speed — it will take less time, as the RS will not have to take the time to remove their flotation.

### Note

- If the survivor's flotation is inoperable, the RS may give up his/her LPU-28/P, or don survivor with a personal flotation device from the SRU. Fitting the survivor with a personal flotation device is always a safe practice, and will make disentanglement/recovery procedures easier to accomplish in a timely and safe manner (Figure 3-20).
- Use of the TRI-SAR harness (TSH) by the RS will require the RS to anticipate the need to deploy with flotation for the survivor(s) from the SRU.
- It is highly recommended that the survivor be fitted with working flotation prior to continuing with rescue procedures. The decision is the responsibility of the RS, who should have the greatest situational awareness of the rescue scene.
- Dependent on the flotation assembly installed on the various harnesses in use, the RS must use the appropriate inflation procedures.

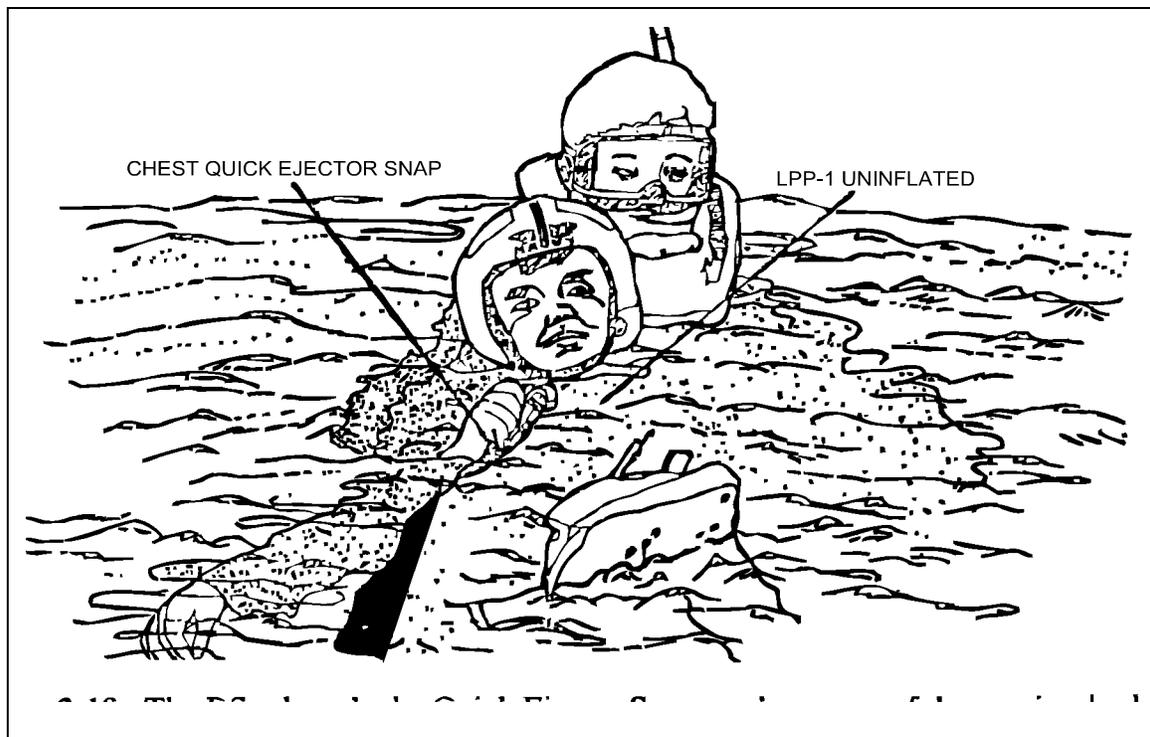


Figure 3-19. The RS Releases the Quick Ejector Snap on the Center of the Survivor's Chest

### 3.7.7 Disentangle the Survivor; Head-to-Toe



- The RS shall exercise extreme care when it becomes necessary to cut shroud lines; an open-bladed knife shall only be used as a last resort.
- The “Spinal Highway” disentanglement technique shall not be used on a survivor with a known or suspected injury to the head, neck, or spine.

#### Note

Submerge as many times as required to ensure all shroud/suspension lines are clear of the survivor. Use the side of the survivor as a reference, and work from head to toe, proceeding hand-over-hand along the side, removing any entanglements and debris. Suspension lines shall be cut only if necessary. Utilize a pocket shroud cutter.

1. Clear all shroud/suspension lines.
2. Integrated torso harness includes:



The integrated torso harness should never be removed in the water. The integrated torso harness incorporates the lifting “D” ring and removal of the harness may increase the risk of the survivor drowning as the flotation device would have to be removed first.

#### Note

- The Koch fittings are located on each of the survivor’s shoulders (Figure 3-21) and release the deployed parachute from the survivor’s harness. Release the Koch fittings by lifting the cover plate, pushing down on the locking bar, and separating the fitting (Figure 3-22).
- Any harness that utilizes Koch fittings for parachute release will have a parachute harness sensing release unit (PHSRU) integrated into the Koch fitting. The PHSRU is an integral part of the Sea Water Activated Release System (SEAWARS). More information can be found in Chapter 8 of this manual.
- If the SEAWARS fails to activate/separate the survivor’s parachute, the RS will have to release the Koch fitting as described above. No harm will come to the RS if the SEAWARS activates while the RS is touching the unit.

- a. Release the Koch fittings about the survivor's shoulders (Figure 3-23).

**Note**

- The oxygen hose is connected to the rigid seat survival kit (RSSK) seat pan by a quick-release bayonet fitting. To release, lift guide ring and pull out (Figure 3-24).
- Locate the quick release fitting by running your hand along the O2 hose starting from its connection point at the base of the RSSK until found.

- b. Release the oxygen hose from the seat pan (RSSK) (Figure 3-24).

**Note**

The leg straps connect the RSSK to the aviator. A mini-Koch fitting is located on each leg strap. The mini-Koch fittings are released in the same manner as the shoulder Koch fittings.

- c. Release the survivor's seat pan (RSSK) by releasing the leg mini-Koch fittings located on or around each of the survivor's hips (Figure 3-25).

3. USN quick fitting harness (Figure 3-18) includes:

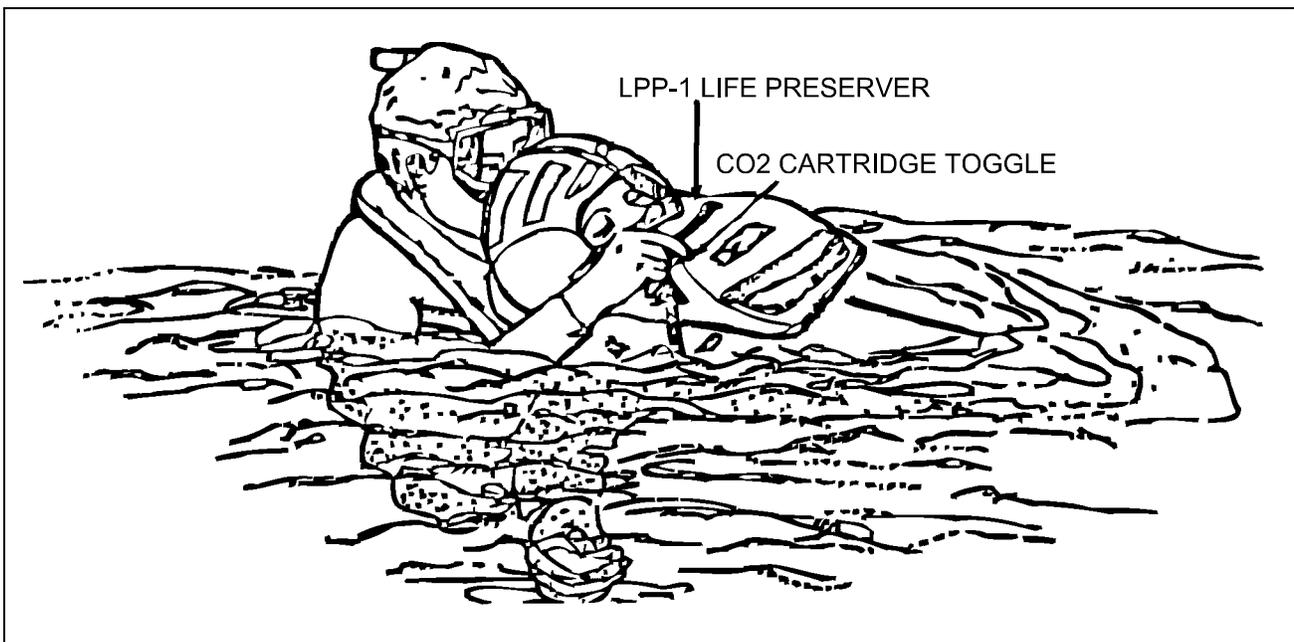


Figure 3-20. RS Inflates the Survivor's Flotation as Needed

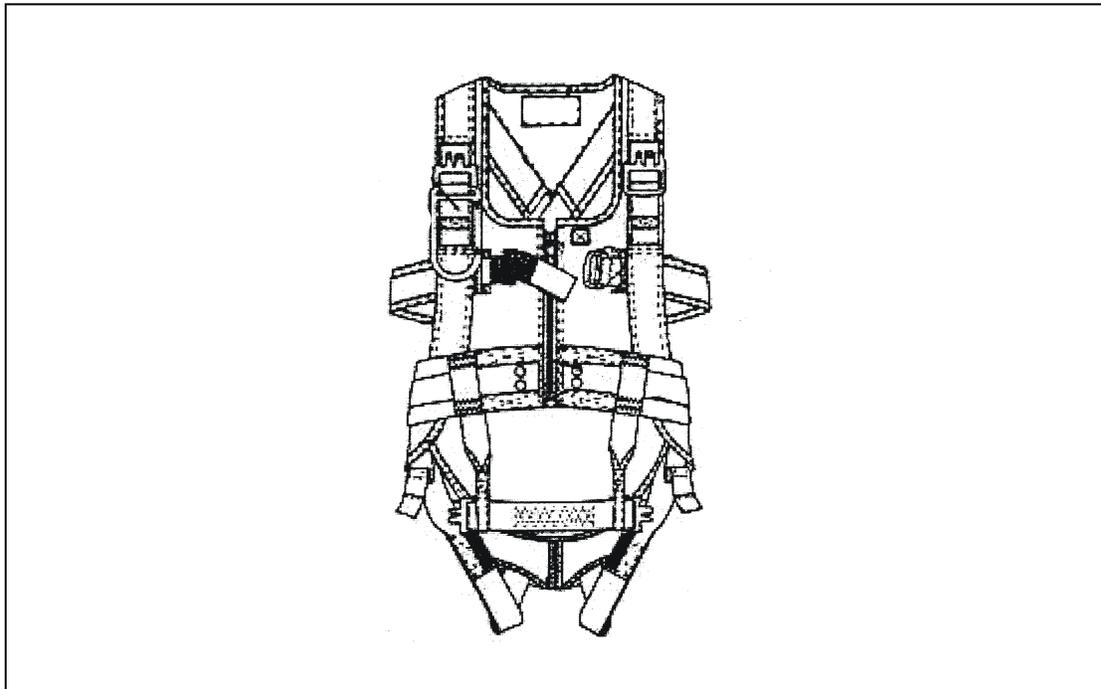


Figure 3-21. One of the Many Versions of the U.S. Navy Integrated Torso Harness

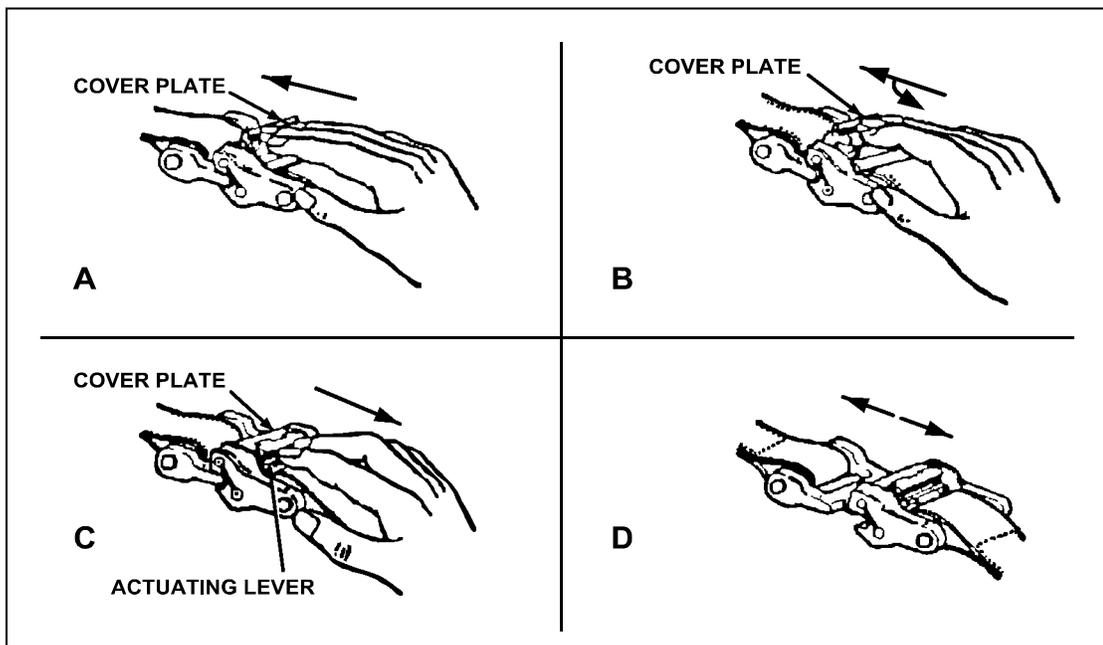


Figure 3-22. Integrated Torso Harness Koch Fittings

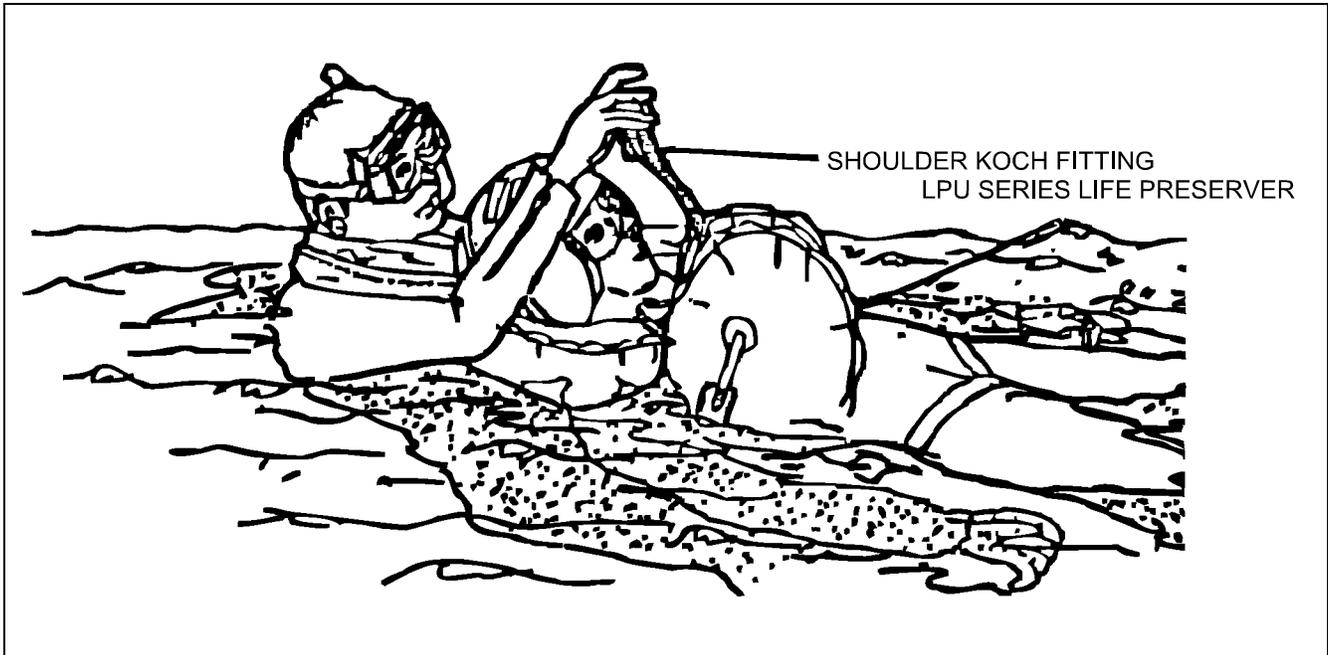


Figure 3-23. The RS Releases the Koch Fittings about the Survivor's Shoulders

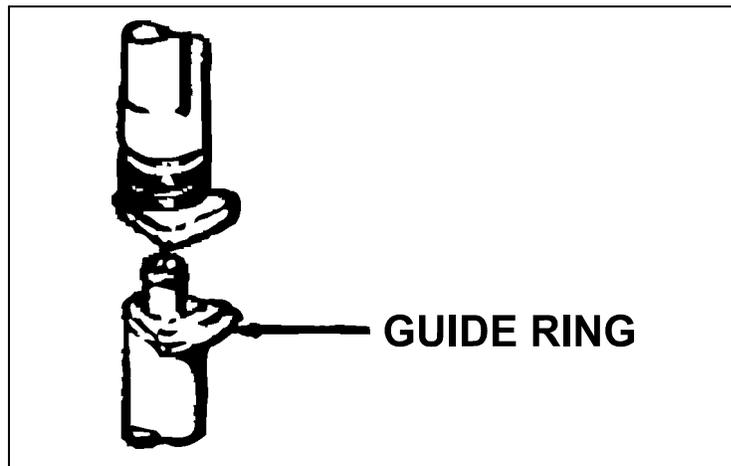


Figure 3-24. Oxygen Hose Connection

**Note**

The shoulder straps of the USN quick fitting harness are removed by sliding the straps off the survivor's shoulders, and pulling the survivor's arm completely through (Figure 3-26).

- a. Remove the survivor's shoulder straps (Figure 3-26).

**Note**

The USN quick fitting harness leg quick ejector snaps are located on the survivor's hips (Figure 3-18).

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- b. Release survivor's leg quick ejector snaps (Figure 3-27).
  - c. The harness should fall away.
4. USAF quick fitting harness (Figure 3-18) includes:

### Note

After releasing the J-1 fitting and clearing the parachute attachment, the RS should close the J-1 fitting to prevent it from becoming a snag hazard.

- a. The parachute shall be detached from the quick fitting harness by releasing the J-1 fittings on each of the survivor's shoulders (Figure 3-18).

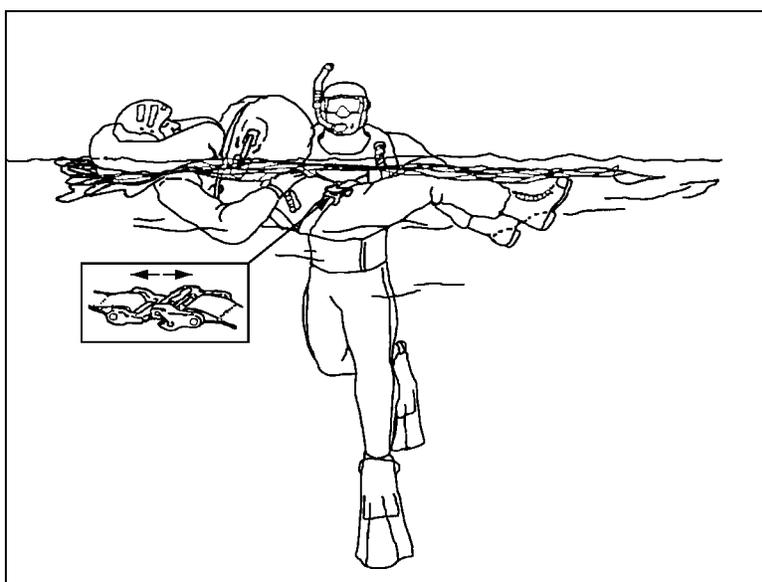


Figure 3-25. Release the Survivor's Seat Pan (RSSK) by Releasing the Leg Mini-Koch Fittings Located on, or around, Each of the Survivor's Hips

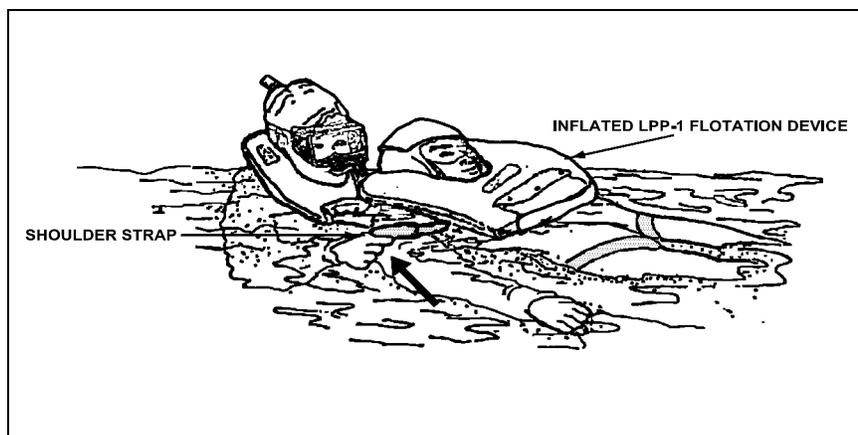


Figure 3-26. The RS Removes the Survivor's Shoulder Straps

**Note**

The shoulder straps of the USAF quick fitting harness are removed by sliding the straps off the survivor's shoulders, and pulling the survivor's arm completely through (Figure 3-26).

- b. Remove the shoulder straps (Figure 3-26).

**Note**

The USAF back pack harness leg quick ejector snaps are located on the survivor's hips (Figure 3-18).

- c. Release leg quick ejector snaps (Figure 3-27).
  - d. The harness should fall away.
5. CMU-30 (Figure 3-28) and CMU-33 Type I (Figure 3-29) survival vests include:



- Use of the PRU-60/P22P-15 (soft) and PRU-61/P22P-15 (hard) integrated body armor in conjunction with the CMU-30 or CMU-33 Type I survival vest will cause the survivor to float dangerously low in the water, thus increasing the risk of the survivor drowning (especially if unconscious).
- The RS shall ensure the hard body armor is removed immediately after inflation of the survivor's personal flotation device.

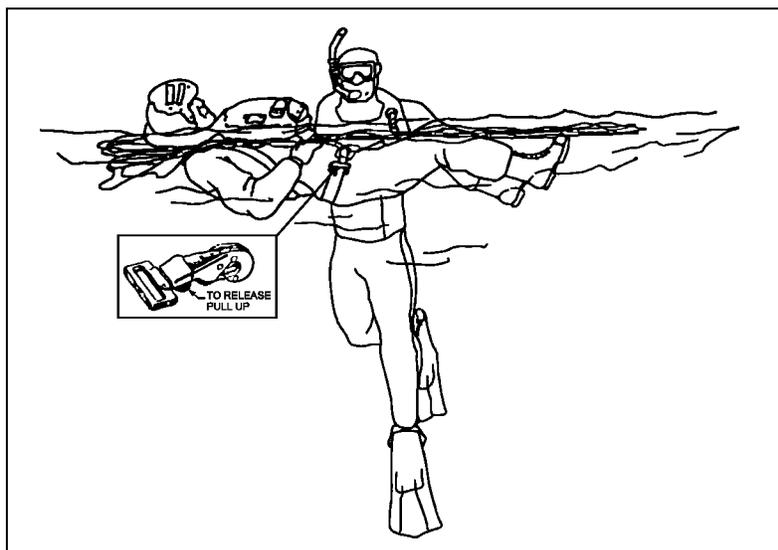


Figure 3-27. The RS Releases the Survivor's Leg Quick Ejector Snaps

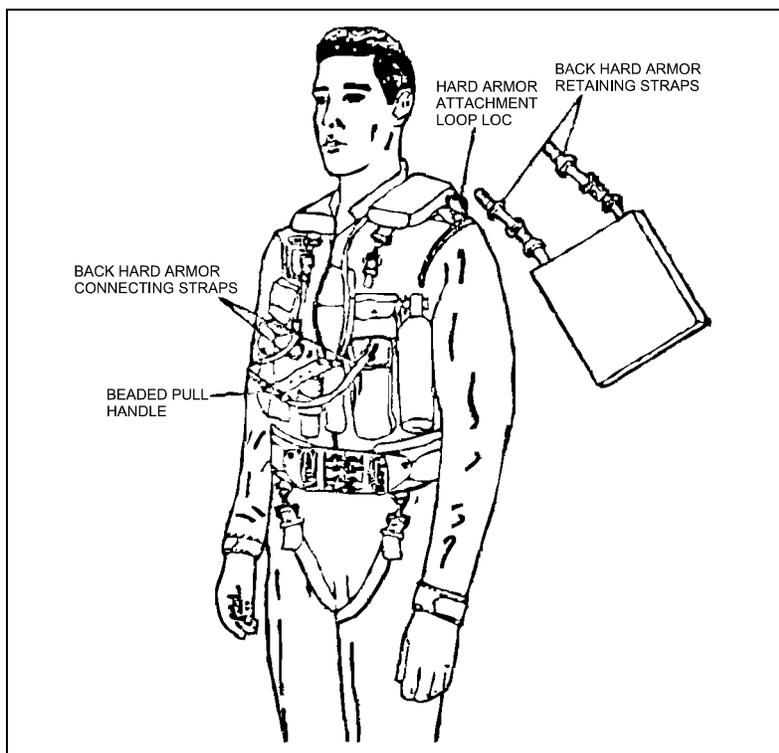


Figure 3-28. CMU-30 Survival Vest

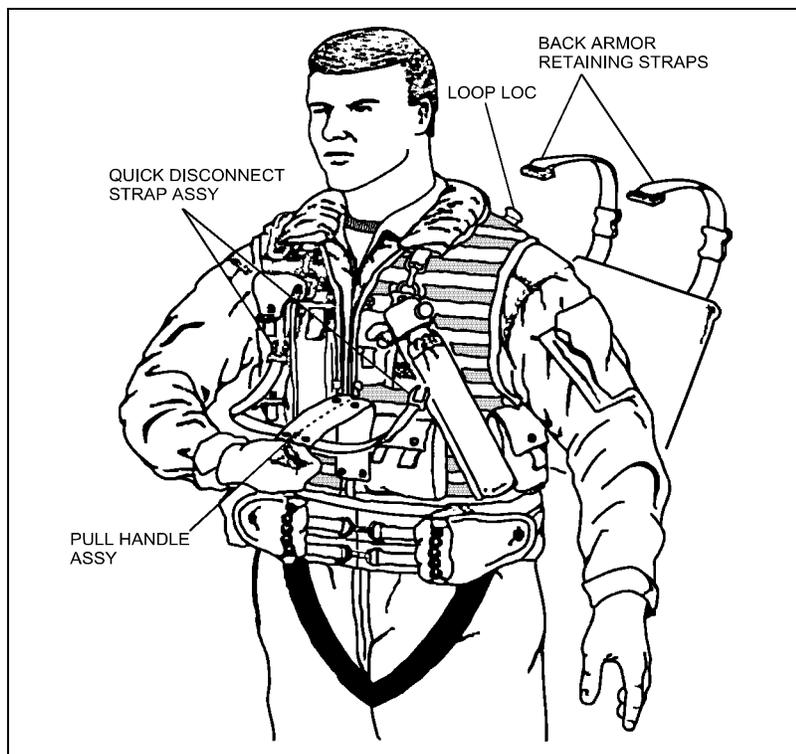


Figure 3-29. CMU-33 Type I Survival Vest

**Note**

If the hard armor plates are present, and the survivor's flotation is inflated, release the plastic clasp that holds the two flotation lobes together. This will facilitate easier removal of the front hard armor plate. If the survivor does not have hard armor installed and/or the survivor's flotation has failed, disregard this note.

- a. Check for and release the hard armor plates from the survival vest.



Newer models of the CMU-30 or CMU-33 Type I survival vests have cylindrical beads on the beaded pull handle, vice older models with round beads similar to flotation inflation lanyards. Do not confuse the beaded pull handle for release of the back hard armor plate with the beaded handles used on the survivor's flotation assembly.

- b. Locate and identify the beaded pull handle for release of the back hard armor plate (Figure 3-29).



Pull the beaded pull handle out and away from the survivor until it completely detaches from the survival vest (approximately 18 inches). The back hard armor plate should fall away.

- (1) If either the beaded pull handle fails to completely detach from the survival vest and/or the back hard armor plate does not fall away, the RS shall:
  - (a) Check and release the snaps holding the beaded pull handle onto the front of the survival vest, and pull the beaded pull handle again.
  - (b) Release the back hard armor retaining straps from the Loop Loc fittings on both of the survivor's shoulders.
  - (c) Pull the back hard armor plate free of the hook/pile tape located on the rear of the survival vest.



Do not fully unzip the survival vest. Unzip the survival vest only enough to fully expose the front hard armor plate nylon web handle.

- (d) Unzip the survival vest to expose the front hard armor plate nylon web handle.



Care shall be taken to ensure that the front hard armor plate does not contact the survivor's face as the RS pulls it free of the survival vest.

- (e) Grasp the nylon web handle of the front hard armor plate located on the center of the survivor's chest, inside the survival vest. Pull the front hard armor plate free from its hook/pile tape and discard.

### 3.7.8 Life Raft Extraction (If Needed)

Use the following procedures to extricate a survivor from a life raft.



Ensure the proper method of life raft extrication is used on survivor(s) with known or suspected injury to the head, neck, or spine.

#### Note

- The point at which disentanglement procedures become hindered by the survivor's position in the life raft is the point at which the RS should extricate the survivor from the life raft. Once the survivor is in the water, the RS resumes disentanglement procedures from where the RS left off.
  - Life rafts should be used to the maximum extent possible for staging survivor(s), until recovery can be accomplished.
  - At the discretion of the RS, the life raft may be punctured with a knife and sunk before, during, or after the survivor has been removed.
  - Always inform the survivor of your intentions with regard to extricating them from the life raft — failure to do so may cause the survivor to panic and become uncooperative.
1. Sink the life raft from under survivor(s). *Use only this method of life raft extraction if the survivor has a known or suspected injury to the head, neck, or spine.* This method should be the RS's first choice in all single survivor rescue scenarios.

**WARNING**

Prior to the RS taking physical control of a survivor, the RS shall take into account the type of injuries the survivor has communicated. An *unconscious survivor automatically communicates an injury to the head, neck, and spine*. The RS shall use only enough force as necessary to gain positive control of the survivor, being ever mindful of the RS's duty to prevent further injury to the survivor.

- a. The RS positions him/herself behind the survivor, with a firm grasp of the survivor's harness/flight suit (do not grab flotation), between the shoulder blades.
- b. With one hand, the RS removes his scabbard knife while maintaining control of the survivor with the other hand. The RS then uses his knife to deflate the life raft. This is done well clear of the survivor, ensuring not to injure the survivor or the RS.
- c. While the life raft is deflating, the RS stows scabbard knife (if practical), or discards it.

**WARNING**

Do not utilize the "pull" method of life raft extrication (below) if the survivor has a known or suspected injury to the head, neck, or spine.

2. Pull the survivor from the life raft.

**Note**

If the survivor's harness/clothing do not afford the RS adequate control of the survivor, the RS may elect to grab the survivor under both armpits. The RS shall ensure that this method will not cause the survivor further injury.

- a. The RS positions him/herself behind the survivor; the RS's knees will be against the life raft and will have a firm grasp of the survivor's harness, flight suit, or clothing between the shoulder blades (do not grab flotation).
- b. The RS simultaneously pulls the survivor up and over the life raft lobe, while pushing down and away with his/her knees against the life raft lobe.

**WARNING**

Do not utilize the "roll" method of life raft extrication (below) if the survivor has a known or suspected injury to the head, neck, or spine.

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3. Roll survivor(s) out of the life raft.
  - a. The RS positions him/herself behind the survivor, and will have a firm grasp of the survivor's harness/flight suit (do not grab flotation) between the shoulder blades.
  - b. The RS will roll the survivor and life raft either to the left or right. Normally, the RS will rock the survivor/raft twice, side to side, and will roll the survivor on in order to gain momentum.
  - c. On the third roll, the RS will roll the survivor into the water.
  - d. Once the survivor is in the water, the RS immediately rights the survivor by rolling him/her onto his/her back.



The life raft should be sunk prior to conducting the final check of the last survivor. Empty, inflated life rafts pose a hazard to navigation, and create unnecessary SAR efforts when discovered later by surface or aviation platforms.

### Note

- If the OSC deems the recovery of the life raft appropriate for the mishap investigation, then it shall only be recovered via a rescue boat or ship, not by the helicopter.
  - Once the survivor is clear of the life raft, and the RS deems that there is no further use for it, the RS should use the scabbard knife to deflate the life raft prior to continuing with disentanglement/recovery procedures. The RS should be aware that some large multiplace life rafts have two inflation chambers that require puncturing to fully deflate the raft.
4. When the survivor is clear of the life raft, and the life raft is properly disposed of, the RS shall continue with the survivor disentanglement/recovery procedures.

### 3.7.9 Tow the Survivor Clear

Tow the survivor into the wind, and if possible, away from the life raft, parachute (if present), debris, and fuel.

### 3.7.10 Perform a Final Check of the Survivor

1. Continue to check for breathing and assess injuries.
2. Complete head-to-toe disentanglement check.
3. If needed, contact the SRU, and communicate any deviations from normal recovery procedures.



If the survivor is not breathing, or has an injury the RS identifies as immediately life threatening, the rescue hook/rescue strop should be the recovery device of choice.

**3.7.11 Signal “Ready for Pick-Up”**

The RS shall signal the SRU for the desired recovery device if other than the rescue hook or rescue strop.

**3.7.12 Hook into the Survivor (Aviation RSs Only)**

If the survivor is wearing aviation survival equipment, and the RS has selected hoist recovery of both himself and survivor together (dual), the RS shall:

**Note**

- At this point, hooking into the survivor may or may not be a permanent procedure during the recovery phase. Hooking into the survivor ensures the RS and survivor will not be separated during the swim to the double rescue hook.
  - Using the large hook of the double rescue hook as the primary recovery device for the survivor requires special care depending on the type of survival harness the survivor is wearing. Refer to Paragraph 3.9.1 for specific survival harness procedures.
1. Integrated torso harness (Figure 3-21), CMU-30 (Figure 3-28), and CMU-33 Type I (Figure 3-29) survival vests include:
    - a. Hook the RS harness snap hook to the survivor’s gated D-Ring.
  2. All other harnesses:
    - a. Hook the RS’s harness snap hook to the survivor’s lifting V-Ring.

**3.7.13 Hook into the Large Rescue Hook**

Depending on the recovery method and device selected, the RS shall:



Spinal immobilization is essential to ejection egress aircrew. Aircrew who eject from aircraft must be presumed to have spinal injuries. The RS should treat all survivors involved in an incident with a “high index of suspicion” (Chapter 7) as a probable head, neck, or spinal injury; regardless of whether or not the survivor reports any pain or injury. Utilizing the rescue/SAR MEDEVAC litter for recovery is highly recommended to help prevent a potentially life-threatening or permanent neurological injury. In conjunction with use of the rescue/MEDEVAC litter, total spinal immobilization, including cervical collar, should be applied at the earliest convenience.



When hoisting personnel, the large hook of the rescue hook shall always be used, without exception. Under no circumstances is it permissible to use the small hook of the rescue hook to hoist personnel.

1. Aviation RS's harness (HBU-23/P and TRI-SAR), and surface RS's harness:
  - a. Procedures can be found in Paragraph 3.9.1.
2. Other rescue devices:
  - a. Procedures can be found in Paragraphs 3.9.2 to 3.9.5.

#### **3.7.14 Perform a Safety Check**

1. The RS shall check the rescue hook, harness lifting D/V-Rings, snap hooks, and rescue equipment lifting points for security.
  - a. Ensure all lifting points are hooked into the large rescue hook.
2. The RS shall ensure all safety straps are properly secured.
3. Ensure the hoist cable or line is not fouled on equipment, debris, the survivor, or the RS.
4. The RS shall grasp the rescue hook with one hand to protect the RS's and survivor's faces from whiplash of the cable/rescue hook during hoisting.



In all cases (whether the survivor is determined to be panicked, combative, or cooperative) the RS shall not hoist survivors from an overland or maritime environment without the proper application of the selected rescue device to include safety straps or safety devices outlined in this manual.

#### **3.7.15 Signal "Raise Cable"**

1. The RS signals "raise cable" with free hand (Figure 3-30).
2. As tension comes on cable, the RS should wrap his/her arms and legs around the survivor.

### 3.8 AVIATION RESCUE SWIMMER DIRECT DEPLOYMENT PROCEDURES



- The rescue strop shall not be used for DD, unless used in conjunction with the QS for the DD Double Lift Procedure (Below).
  - The QS shall only be used in conjunction with the TSH for DD and recovery of survivors.
  - The QS safety strap shall be used in all training evolutions.
1. The RS is deployed IAW Paragraph 1.3.8 (Figure 3-32).
  2. When being hoisted into the water, the RS should be placed no farther than 2–3 feet from the survivor (Figure 3-32).



If the survivor is placed in the QS device facing away from the RS, there is a possibility of the survivor being injured and/or rendered unconscious due to the extreme pressure placed on the chest area. Placing survivor in the QS in this manner shall only be performed as a last resort in an extreme situation (i.e., swift water, heavy surf, etc.) in which the RS may only get one chance to put the survivor in the QS, or the time required to place the survivor in the QS correctly would threaten the life of the RS and/or survivor.

3. The RS shall attempt to face the survivor, and grab the survivor's arm that coincides with the arm that the RS has the QS positioned on, i.e., the RS's right hand grabs the survivor's left arm if the RS and survivor are facing each other.

#### Note

The detachable lifting strap of the QS can be identified by the red ban of webbing located next to the detachable lifting strap's V-Ring assembly.

4. The RS slides the QS off his/her arm and along the survivors arm, placing the QS over the survivor's head and shoulders. The QS may also be applied to the survivor by:
  - a. Moving the QS over the survivor's feet, and up the legs and torso.
  - b. Disconnecting the QS's detachable lifting strap V-Ring from the large rescue hook, pulling it out of the friction keeper:

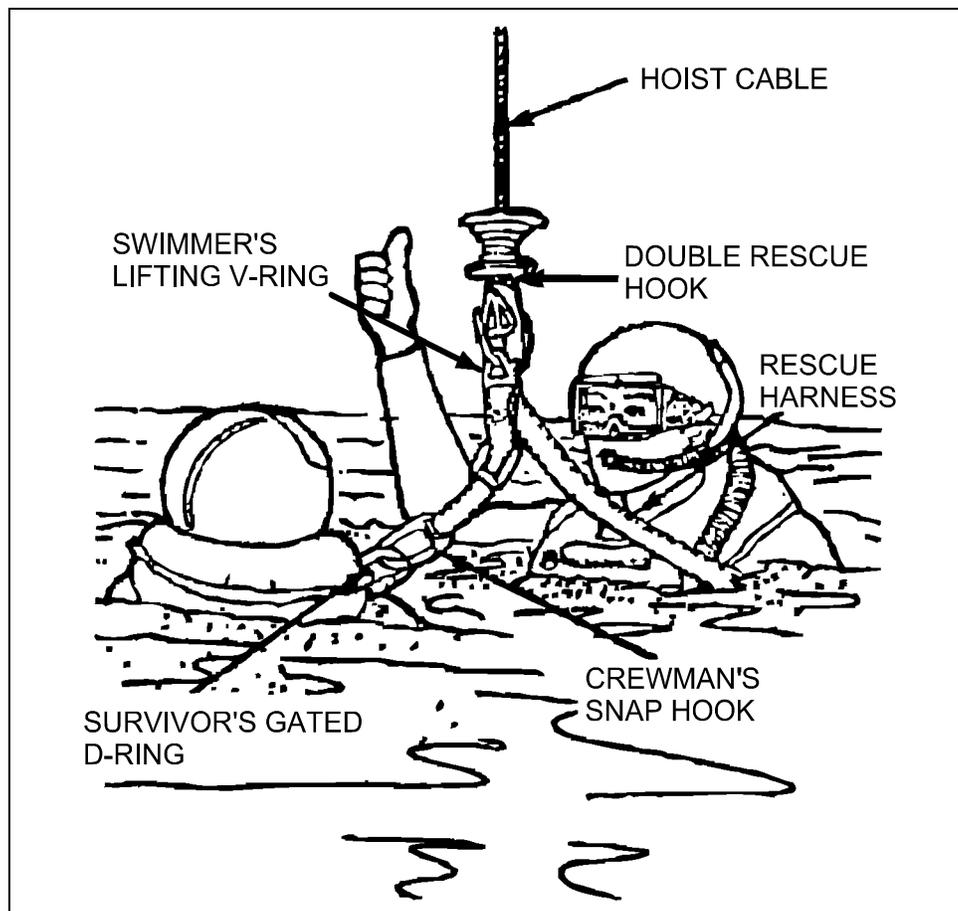


Figure 3-30. After the Safety Check, the RS Signals “Raise Cable”

- (1) Wrap the QS around the survivor’s back.
- (2) Route the QS’s detachable lifting strap V-Ring back through the friction keeper, and reconnect it to the large rescue hook.
5. The RS then pulls the QS up into the armpits of the survivor, as high on the survivor’s back as possible.
6. The RS slides the QS friction keeper as close as possible to the survivor, placing constant pressure on the friction keeper to hold it in place by simultaneously holding both lifting straps with one hand.



**WARNING**

Failure to keep a tight hold of the QS lifting straps will allow the friction keeper to loosen. This may allow the survivor to slide out of the QS during hoisting, or, if the safety strap is utilized, allow the majority of the survivor’s weight to transfer from under the armpits to the survivor’s groin area.

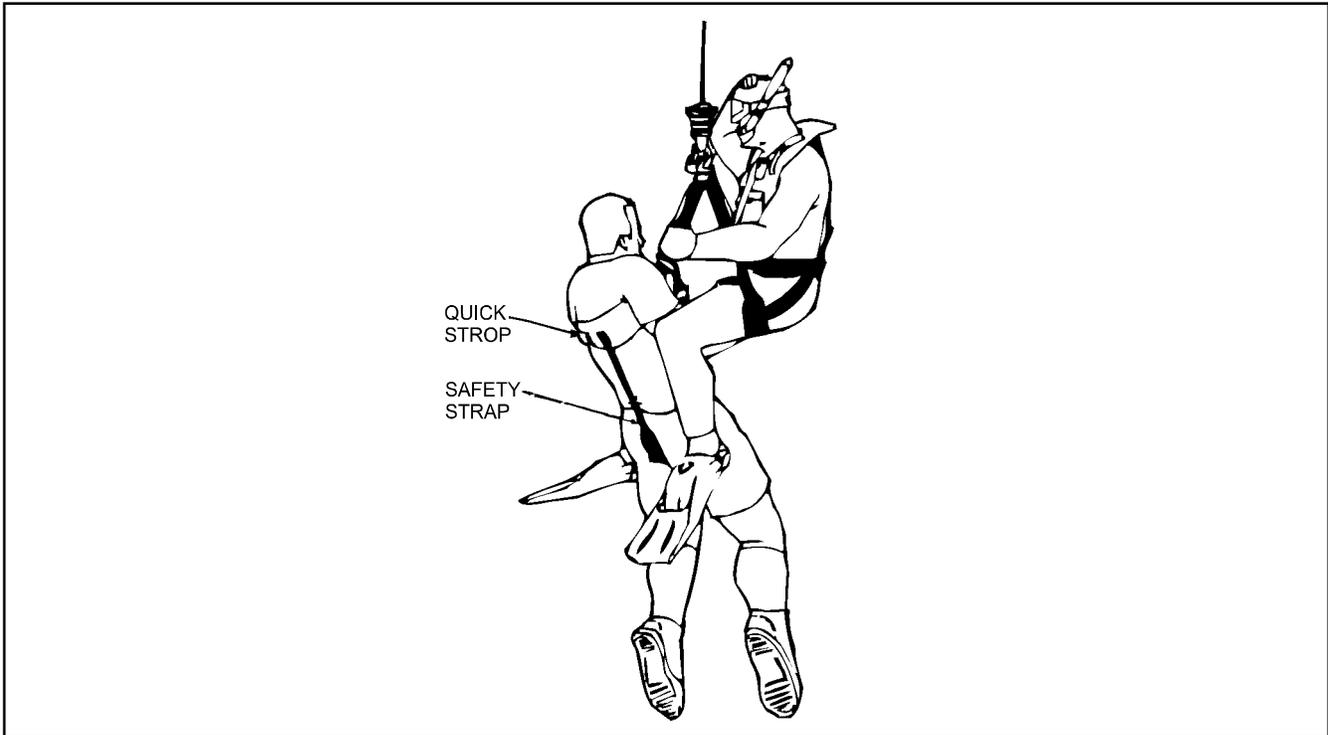


Figure 3-31. RS and Survivor Being Recovered Via Direct Deployment System

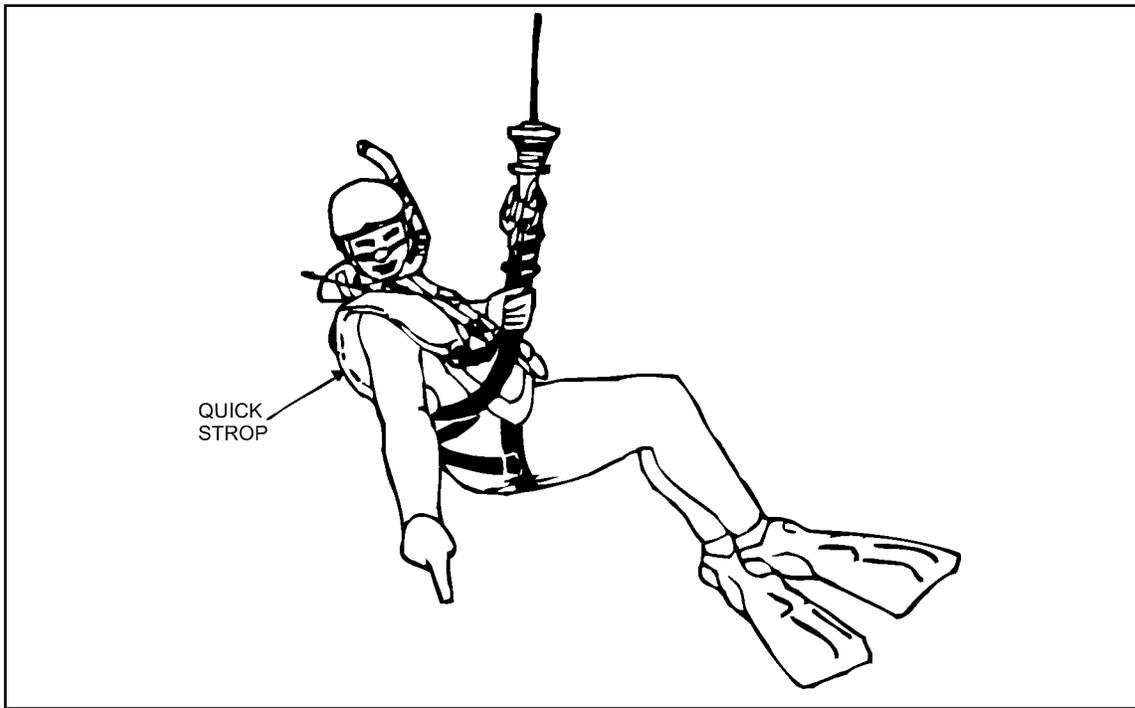


Figure 3-32. As the RS Is Being Hoisted Down to the Survivor, the RS Points to Survivor in the Water; This Helps the CC Deploy RS to Within Arms Reach of the Survivor When the RS Contacts the Water

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7. With his/her free hand, the RS shall reach around and pull the safety strap out of the storage pocket located on the back of the QS.
8. Route the safety strap between the survivor's legs, and attach the safety strap snap lock to the friction keeper. Do not cinch the safety strap down at this time.
9. The RS performs a safety check:
  - a. The RS shall check the rescue hook, TSH lifting V-Ring, and QS lifting V-Rings for security:
    - (1) The RS shall ensure all lifting V-Rings are hooked into the large rescue hook.
  - b. The RS shall ensure the QS detachable lifting strap is properly routed through the friction keeper.
  - c. The RS shall ensure all safety straps are properly secured.
  - d. Ensure the hoist cable is not fouled on equipment, debris, the survivor, or the RS.



### WARNING

In all cases (whether the survivor is determined to be panicked, combative, or cooperative) the RS shall not hoist survivors from an overland or maritime environment without the proper application of the selected rescue device to include safety straps or safety devices outlined in this manual.

10. The RS signals "raise cable" either by the aviation RS's radio, or by hand signal (Chapter 6):
  - a. The RS shall immediately grasp the rescue hook with free hand to protect the RS's face from whiplash of the hoist cable/rescue hook during hoisting.
  - b. After tension has come on the hoist, the RS shall release the rescue hook, and reach down and adjust the QS safety strap just enough to take up the excess slack. Do not cinch the safety strap tightly against the crotch of the survivor.

**Aviation RS Maritime DD Double Lift**—When recovering a hypothermic or potentially hypothermic, survivor, the double-lift method of DD is an expedient alternative to the rescue/MEDEVAC litter. The standard rescue strop is used in conjunction with the quick strop to hoist the survivor in a semisupine position (Figure 3-33). Sound judgment shall be used to ensure that the correct method of recovery is utilized to prevent further injury to the survivor.

### Note

- Prior to deployment, the RS shall ensure the correct connection of all rescue devices into the large rescue hook. In the case of the double lift, the RS's TRI-SAR lifting V-Ring is hooked up first, then the rescue strop second, and finally the QS (making sure the QS detachable lifting strap routed through the friction keeper, and is the last item hooked into the large rescue hook).
- The detachable lifting strap of the QS can be identified by the red band of webbing located next to the detachable lifting strap's V-Ring assembly.

1. The RS is deployed IAW Paragraph 1.3.8.
2. When being hoisted into the water, the RS should be placed no farther than 2–3 feet from the survivor.

**Note**

Sliding the rescue strop over the survivor’s head is the preferred method to fit the survivor with the rescue strop. Any method that would require the RS to unhook the QS from the large rescue hook in order to unhook the rescue strop should be avoided.

3. The RS shall attempt to face the survivor, and grab the survivor’s arm that coincides with the arm that the RS has the rescue strop on, (i.e., the RS’s right hand grabs the survivor’s left arm if the RS and survivor are facing each other).
4. The RS slides the rescue strop off of his/her arm and along the survivors arm, placing the rescue strop over the survivor’s head and shoulders.

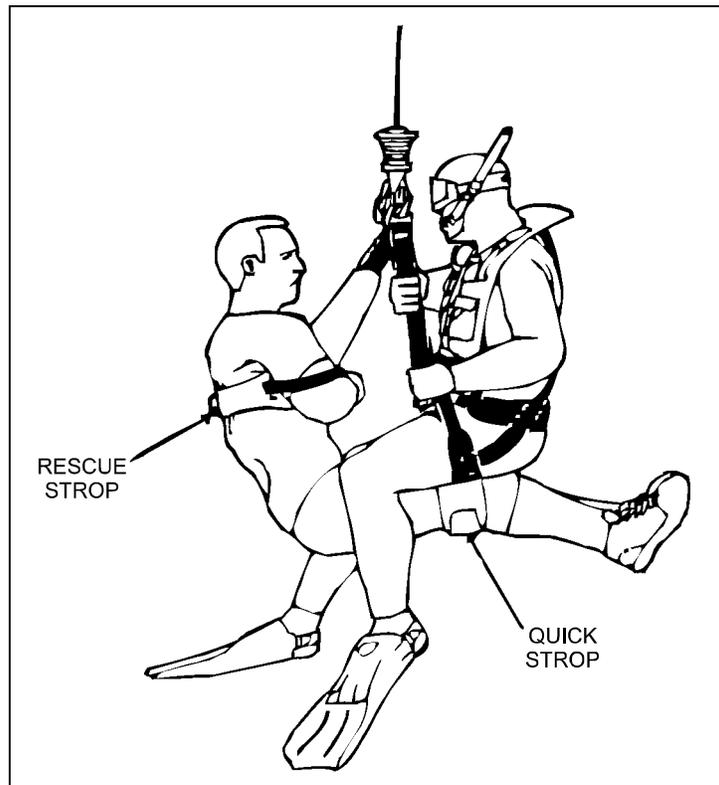


Figure 3-33. Survivor Being Recovered Via the DD Double-Lift Method



In all cases (whether the survivor is determined to be panicked, combative, or cooperative) the RS shall not hoist survivors from an overland or maritime environment without the proper application of the selected rescue device to include safety straps or safety devices outlined in this manual.

5. The RS shall fit the survivor with the rescue strop as IAW Paragraph 3.9.2:
  - a. Ensure the rescue strop safety straps are properly utilized.

**Note**

During a double-lift recovery, the QS safety strap is not used.

6. The RS slides the QS over the survivor's feet, securing the QS around the survivor's knees by sliding the friction keeper as close to the survivor as possible, placing constant pressure on the friction keeper to hold it in place, by simultaneously holding both lifting straps with one hand.
7. The RS performs a safety check:
  - a. The RS shall check the large rescue hook, TSH lifting V-Ring, rescue strop lifting V-Rings, and QS lifting V-Rings for proper attachment points and security:
    - (1) The RS shall ensure all lifting V-Rings are hooked into the large rescue hook.
  - b. The RS shall ensure the rescue strop safety straps are properly secured.
  - c. The RS shall ensure the QS detachable lifting strap is properly routed through the friction keeper.
  - d. Ensure the hoist cable is not fouled on equipment, debris, the survivor, or the RS.



In all cases (whether the survivor is determined to be panicked, combative, or cooperative) the RS shall not hoist survivors from an overland or maritime environment without the proper application of the selected rescue device to include safety straps or safety devices outlined in this manual.

8. The RS signals "raise cable" either by the aviation RS's radio or by hand signal (Chapter 6):
  - a. The RS shall immediately grasp the rescue hook with free hand to protect the RS's face from whiplash of the hoist cable/rescue hook during hoisting.

### 3.9 RESCUE DEVICE PROCEDURES

In all RS rescue device procedures, the RS shall communicate to the SRU the desired rescue device, using the appropriate hand signal and/or RS radio (aviation).



- When hoisting personnel, the large hook of the rescue hook shall always be used, without exception. Under no circumstances is it permissible to use the small hook of the rescue hook to hoist personnel.
- In all cases (whether the survivor is determined to be panicked, combative, or cooperative) the RS shall not hoist survivors from an overland or maritime environment without the proper application of the selected rescue device to include safety straps or safety devices outlined in this manual.

#### 3.9.1 Aviation RS's Harness (HBU-23/P), Aviation RS's TRI-SAR Harness, and Surface RS's Harness

##### Note

- The surface RS's harness does not allow for the RS to "hook in" to the survivor, but many of the notes and warnings for the different types of survival harnesses apply. The surface RS shall utilize the hookup procedures listed below for hoisting the survivor only, and at the surface RS's discretion, hook into the large rescue hook with the surface RS's harness lifting V-Ring for dual recovery of both the RS and survivor.
  - For the purposes of Paragraph 3.9.1, the aviation RS's harness includes the HBU-23/P and the TRI-SAR harness. When a procedure names a specific harness, that procedure is for that specified harness only.
  - When at all possible, the RS should work from behind the survivor.
1. RS only includes:
    - a. Hook the RS's harness lifting V-Ring into the large rescue hook.
  2. Integrated torso harness (Figure 3-21) includes:



If the survivor is wearing an integrated torso harness, use extreme caution to ensure that the survivor's Gated D-Ring and the RS's harness (HBU-23/P) snap hook are not disconnected before hoisting. Upon reaching the aircraft door opening and while bringing in the survivor, ensure that the gated D-Ring and snap hook do not twist and inadvertently disconnect.

**Note**

- If the UH-1N helicopter is utilized as the SRU, the RS shall connect the survivor's gated D-Ring directly into the large rescue hook. If dual hoisting is desired, the RS shall then hook the RS's harness lifting V-Ring directly into the large rescue hook.
  - If the RS is wearing the TRI-SAR harness, the RS shall connect the survivor's Gated D-Ring directly into the large rescue hook. If dual hoisting is desired, the RS shall then hook the TRI-SAR harness lifting V-Ring into the large rescue hook.
- a. Snap the RS's harness (HBU-23/P) snap hook into the survivor's gated D-Ring, and the large rescue hook into the HBU-23/P lifting V-Ring, to recover both the RS and the survivor.
  - b. Snap the large rescue hook directly into the survivor's gated D-Ring for recovery of the survivor only.
3. CMU-30 (Figure 3-28) and CMU-33 Type I (Figure 3-29) survival vests include:



If the survivor is wearing a CMU-30/33 Type I survival harness, use extreme caution to ensure that the survivor's gated D-Ring and the RS's harness snap hook are not disconnected before hoisting. When tension is applied via the rescue hoist, ensure survivor's gated D-ring is not side loaded. Upon reaching the aircraft door opening and while bringing in the survivor, ensure that the gated D-Ring and snap hook do not twist and inadvertently disconnect.

- a. If a rescue stop is unavailable, or the CMU-30/33 Type I gated D-Ring is chosen as the rescue device:
    - (1) Snap the RS's harness snap hook into the survivor's gated D-ring.
    - (2) Snap the RS's harness lifting V-ring into the large end of the DRH.
4. SV-2 harness includes:



To prevent injuring the survivor, the RS shall check for a fist-sized space between the survivor's lifting V-Ring and chest prior to hoisting a survivor wearing an SV-2 style survival harness.

- a. Snap the RS's harness snap hook into the survivor's lifting V-Ring. The large rescue hook into the RS's harness lifting V-Ring for recovery of both the RS and the survivor.
- b. Snap the large rescue hook directly into the survivor's lifting V-Ring for recovery of the survivor only.

5. TRI-SAR harness includes:
  - a. Hook survivor's lifting V-Ring directly to large hook of the double rescue hook.
6. All other survivor vests/parachute harnesses:
  - a. Snap the RS's harness snap hook into the survivor's lifting V-Ring.
  - b. Snap the RS's harness lifting V-Ring into the large rescue hook.
7. The RS shall perform a safety check, and signal "raise cable" IAW Paragraphs 3.7.14 and 3.7.15.

### 3.9.2 Rescue Strop

When the rescue strop is selected as the primary recovery device, the arm retainer straps shall be put around both of the survivor's arms. The arm retainer straps should ideally go over both of the survivor's arms, above the elbows, and be cinched down tightly to preclude the survivor's arms from slipping out. If the arm retaining straps are employed incorrectly, there is a high possibility that the survivor's arms will raise above the head, and allow survivor to fall from the rescue strop during hoisting. The RS shall place the rescue strop on the survivor using the following procedures:

#### Note

The arm retainer straps shall be outboard when placing the rescue strop on the survivor.

1. Tow the survivor to the rescue strop using the cross-chest carry or equipment/collar tow.

#### Note

If possible the RS should work from behind the survivor. Working from behind the survivor provides the advantages of speed and control.

2. With one hand on the survivor, grasp the free (bitter) end of the rescue strop and pass it between the survivor's back and RS's stomach. Hold the rescue strop in place by squeezing it between the survivor and himself/herself.
3. With one hand on the survivor, use the free hand to grasp the rescue hook. The RS shall then plunge the rescue hook into the water behind the survivor's arm, and push forward and up so the rescue hook comes out of the water on the front side of the survivor's body near the chest. The RS shall squeeze the survivor's shoulder/chest between the upper and lower arm creating a single arm control. The RS may now release the tow/carry hand from survivor.
4. With one hand on the rescue hook maintaining single arm control, grasp the rescue strop free-end lifting V-Ring with free hand, plunge under the water, forward and up so the V-Ring surfaces on the front side of the survivor close to the chest. The RS shall squeeze both arms together at the elbows to maintain a double arm control of the survivor.

#### Note

If the RS has short arms or the survivor has a large frame, the RS may experience difficulty attaching the rescue strop free-end V-Ring to the rescue hook in front of the

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survivor while in a position behind the survivor. The RS may need to slightly submerge behind the survivor and hook rescue strop free-end V-Ring to rescue hook around upper abdomen. If the RS is unable to connect strop from behind the survivor, he/she shall quickly release grasp of rescue hook and rescue strop, and move to the front of the survivor to complete the recovery procedures below.

5. Connect the rescue strop free-end lifting V-Ring into large rescue hook.
6. Position the rescue strop tightly under the survivor's armpits, and on the upper half of the survivor's back.



### WARNING

- If the rescue strop/arm retaining straps are not utilized around both arms due to a severe injury to one arm, the aviation RS shall attempt to communicate to the SRU the survivor's injuries, and the deviation from normal rescue strop procedures prior to hoisting the survivor.
- If the rescue strop arm retaining straps are not utilized around both arms due to a severe injury to one arm. The RS shall accompany the survivor up the hoist to ensure the survivor does not fall out of the rescue strop.
- In all cases (whether the survivor is determined to be panicked, combative, or cooperative) the RS shall not hoist survivors from an overland or maritime environment without the proper application of the selected rescue device to include safety straps or safety devices outlined in this manual.

### Note

If the survivor has a severe injury to one arm, and other considerations preclude the use of a more appropriate rescue device, the arm retaining straps should be applied around the uninjured arm only.

7. Unsnap both arm retainer straps from the rescue strop and route around survivor's arms and under the rescue strop lobes. Ensure the arm retaining straps are as high up the survivor's arms as possible (above the survivor's elbows).



### WARNING

Failure to route the arm retaining straps tightly around survivor's arms, above the elbows, can result in the survivor falling out of the strop. In all cases where the retaining straps are not large enough to be routed correctly above the elbows, alternate means of rescue is mandatory.

8. Connect the arm retaining strap snap hook to the arm retainer strap V-Ring.

9. Pull the webbing on the arm retainer strap V-Ring until the arm retaining straps are secured tightly around the survivor's upper arms.
10. The RS shall move in front of the survivor if not already there. The RS connects the RS's harness lifting V-Ring into the large rescue hook.
11. The RS shall perform a safety check, and signal "raise cable" IAW Paragraphs 3.7.14 and 3.7.15.

### 3.9.3 Rescue/MEDEVAC Litter

The rescue/MEDEVAC litter should be the primary recovery device if the survivor is an ejected aviator, or the RS suspects a head, neck, or spinal injury based upon the initial assessment of the survivor's condition. Depending on environmental conditions and the proficiency of the RS and SRU crew, a single disentanglement and rescue/MEDEVAC litter recovery may take anywhere from 10–30 minutes from rescue swimmer deployment to survivor recovery. The rescue/MEDEVAC litter should not be used if the survivor is in need of immediate medical treatment due to life-threatening injuries such as no breathing and/or severe bleeding. When the rescue/MEDEVAC litter is selected as the rescue device, the following procedures are to be followed:



Spinal immobilization is essential to ejection egress aircrew. Aircrew who eject from aircraft must be presumed to have spinal injuries. Utilizing the MEDEVAC litter for recovery is highly recommended to help prevent a potentially life-threatening or permanent neurological injury. If the rescue litter is used, total spinal immobilization, including cervical collar and a backboard, should be applied at the earliest convenience.

#### Note

- The rescue (stokes litter) and the SAR MEDEVAC litter are different pieces of equipment. For the purposes of this section, they will be combined into the "Rescue/MEDEVAC litter" and any differences in procedures will be noted using the specific equipment nomenclature.
- The RS should deploy with trail line gloves or wet suit gloves with leather or appropriately reinforced palms to save time.
- The RS shall give the appropriate hand signal or radio communication (Chapter 6) as soon as it is determined that the rescue/MEDEVAC litter is needed. This will allow the hoisting crewman an opportunity to rig the rescue/MEDEVAC litter while the RS finishes with the survivor disentanglement/recovery procedures.
- The surface RS does not utilize step 2 of these procedures.
- Use of patient restraint straps with hook-and-pile tape are no longer authorized. The rescue litter (stokes) is required to have the color-coded buckle type patient restraint straps (P/N: 140). The SAR MEDEVAC litter is required to have a new frame cover that integrates the color-coded buckle type patient restraint straps (P/N: 402-2).

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1. The rescue/MEDEVAC litter is deployed IAW Paragraph 1.4 (aviation), and 2.8.3.6 (surface).
2. (Aviation RS only): When the rescue/MEDEVAC litter is in the water, the RS shall disconnect the rescue/MEDEVAC litter from the large rescue hook and place the hoisting sling cables to the outside of the rescue/MEDEVAC litter:
  - a. (Surface RS only): As the rescue/MEDEVAC litter enters the water the RS will use the trail line to pull the rescue/MEDEVAC litter 20–25 feet from the ship, at the same time the davit crew will provide slack on the in-haul line.

### Note

The rescue/MEDEVAC litter hoisting cables must be kept from interfering with the patient restraint straps, as they could become fouled under the survivor.

3. The RS shall guide the survivor into the rescue/MEDEVAC litter by using the equipment/collar tow.



If the survivor is wearing a buoyant antiexposure suit such as the Imperial dry suit, it will affect the flotation characteristics of the rescue/MEDEVAC litter, and may negate the rescue/MEDEVAC litter's self-righting feature.

4. Once the survivor is positioned, the RS should straddle the rescue/MEDEVAC litter and use the knees or lower legs to hold the rescue/MEDEVAC litter. This will provide security (positive control), and stability during the evolution.
5. The RS shall take the top restraint strap (grey in color) from the front of the rescue/MEDEVAC litter and secure it around the survivor's chest. The strap is pulled loose from the right side, placed under the arms but over the chest, and attached to the fitting on the left (Figure 3-34).

### Note

- All restraint straps shall be on the RS's right as he faces the open side of the rescue/MEDEVAC litter. Four of the five straps shall be faked. The remaining one has a chest pad attached.
  - If the survivor is wearing a helmet, the RS will be unable to secure the head restraint of the SAR MEDEVAC litter. If this occurs, the RS shall bypass the head restraint and continue with normal procedures.
  - The SAR MEDEVAC litter foot restraint straps do not need to be utilized, unless hoisting the SAR MEDEVAC litter vertically (Figure 3-35).
6. The RS shall take the second (red in color) patient restraint strap, and secure it over the survivor's arms (over the wrists/forearms).
  7. The RS shall secure the rest of the patient restraint straps working down towards the feet.

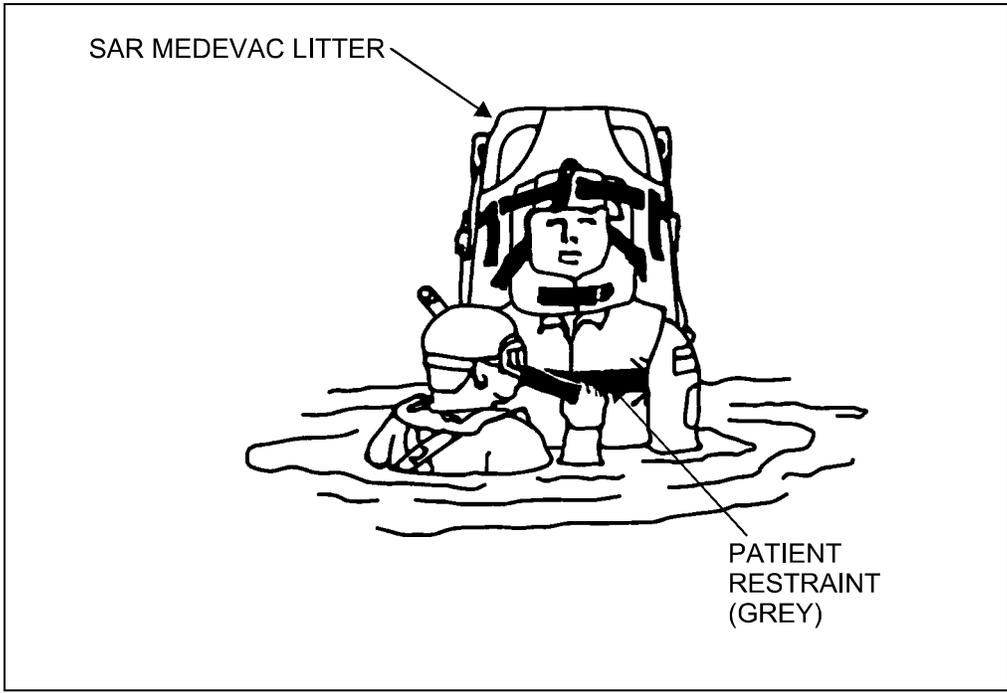


Figure 3-34. The RS Shall Take the Top Restraint Strap (Grey in Color) from the Front of the Rescue/MEDEVAC Litter and Secure it Around the Survivor’s Chest

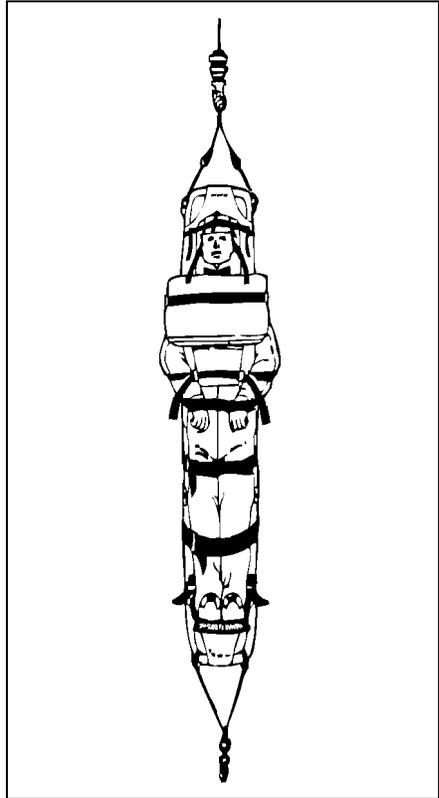


Figure 3-35. MEDEVAC Litter Being Hoisted Vertically

**Note**

When securing the chest pad (Figure 3-36), the RS may encounter difficulty if the survivor has inflated flotation. However, the survivor's flotation is not to be removed or deflated even if the flotation prevents securing the chest pad. Instead, remove the chest pad from the rescue/MEDEVAC litter and continue with rescue. If practical, the RS will return to the SRU with the chest pad.

8. Once all of the patient restraint straps are properly secured, attach the chest pad over the survivor's upper arms/chest.
9. (Aviation RS only): Signal the helicopter "Ready for Pick-up" (Figure 3-37).
10. (Aviation RS only): The RS shall hook the rescue/MEDEVAC litter slings (both sides) into the large rescue hook (Figure 3-38):
  - a. (Surface RS only): The RS shall reach around the rescue/MEDEVAC litter and disconnect either the right or left sling from the rescue hook leaving the other attached.
  - b. (Surface RS only): The RS will bring both the disconnected sling and sling attached to the rescue hook to the front of rescue/MEDEVAC litter and reattach the disconnected sling to the rescue hook ensuring there are no twists in either sling.
11. The RS signals "raise cable" (Chapter 6).
12. Once all the excess hoist cable is reeled in, and the rescue/MEDEVAC litter is completely horizontal, on top of the surface of the water, the RS signals "hold" (Chapter 6).



Figure 3-36. RS Secures Rescue/MEDEVAC Litter Chest Pad



Figure 3-37. RS Signals “Ready for Pick-up”

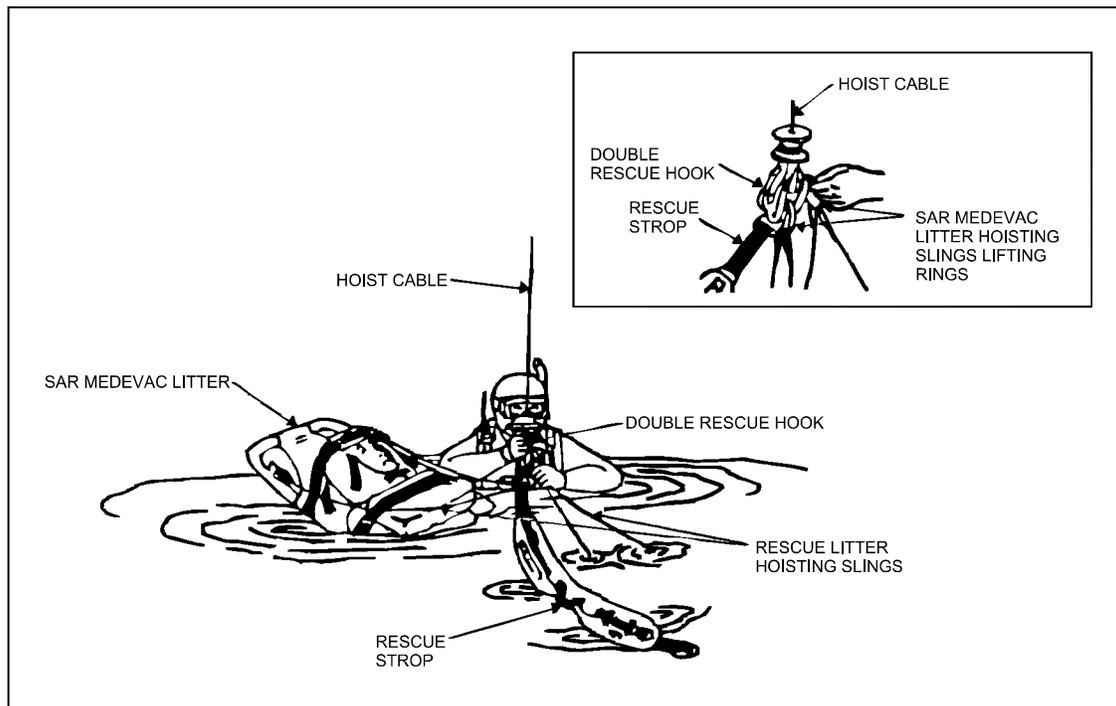


Figure 3-38. The RS Shall Hook the Rescue/MEDEVAC Litter Slings (Both Sides) into the Large Rescue Hook

13. The RS performs a final check:
  - a. Ensure all connections to the large rescue hook are correct.
  - b. Ensure both rescue litter sling assemblies are properly secured to the rescue/MEDEVAC litter. The rescue litter sling snap hooks/carabineers shall be locked, and not kinked where they attach to the frame of the rescue/MEDEVAC litter.

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- c. Ensure the patient restraint straps are properly secured, and not entwined with the rescue litter sling assemblies.
  - d. Ensure the chest pad is properly secured (if used).
  - e. Ensure the hoist cable is not wrapped around any part of the rescue/MEDEVAC litter, debris in the water, the survivor, or the RS.
14. The RS shall grasp the trail line assembly with one hand, and give the “raise cable” hand signal with the free hand. The RS should flutter-kick away from the SRU while tending the trail line to preclude the rescue/MEDEVAC litter from spinning during recovery and/or hitting the side of the ship during forecastle recovery (Figure 3-39).
  15. The SRU crew shall begin rescue/MEDEVAC litter recovery procedures IAW Chapter 1, Paragraph 1.4.6 (aviation) and Chapter 2, Paragraph 2.8.3.6 (surface).

### 3.9.4 Rescue Seat (Aviation Only)

When the rescue seat is selected as the rescue device, the following procedures apply after the rescue seat is lowered into the water IAW Chapter 1, Paragraph 1.4:

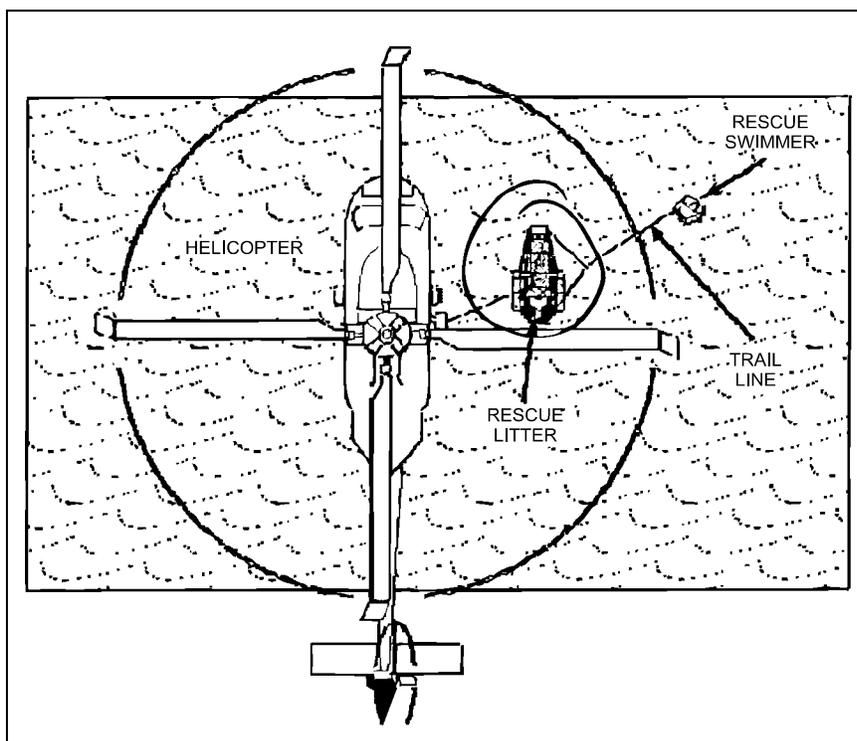


Figure 3-39. The RS Should Flutter-Kick Away from the SRU While Tending the Trail Line to Preclude the Rescue/MEDEVAC Litter from Spinning during Recovery and/or Hitting the Side of the Ship during Forecastle Recovery

**WARNING**

- Only one survivor at a time, or one survivor accompanied by the RS, shall be hoisted using the rescue seat.
  - If hoisting an unconscious survivor with the rescue seat, the RS shall be hoisted along with the survivor.
1. After the seat is in the water, the RS shall pull down one fluke and have the survivor sit on it, facing the rescue seat.

**WARNING**

In all cases (whether the survivor is determined to be panicked, combative, or cooperative) the RS shall not hoist survivors from an overland or maritime environment without the proper application of the selected rescue device to include safety straps or safety devices outlined in this manual.

2. RS shall pull the adjustable safety strap from the flotation collar pouch. The strap shall be routed under one arm, around the back, under the other arm, and attached to the V-Ring. Tighten strap until the survivor is secured against the flotation collar.

**Note**

If the survivor is wearing an inflated LPU-type life preserver, the waist lobes may need to be disconnected prior to attaching the adjustable safety strap.

3. Instruct the survivor to wrap his/her arms around the flotation collar and to not let go until directed to by the CC (Figure 3-40).

**Note**

If the RS elects to be hoisted with the survivor, the RS shall wear the adjustable safety strap in the same manner as the survivor.

4. The RS shall perform a safety check, and signal “raise cable” IAW Paragraphs 3.7.14 and 3.7.15.

**Note**

The RS shall ensure the survivor stays securely seated as tension is applied to the hoist cable.

5. The survivor and/or RS shall be hoisted to the helicopter. Upon reaching the aircraft, the crewman will assist the survivor and/or RS into the aircraft using procedures outlined in Paragraph 1.4.5.3.

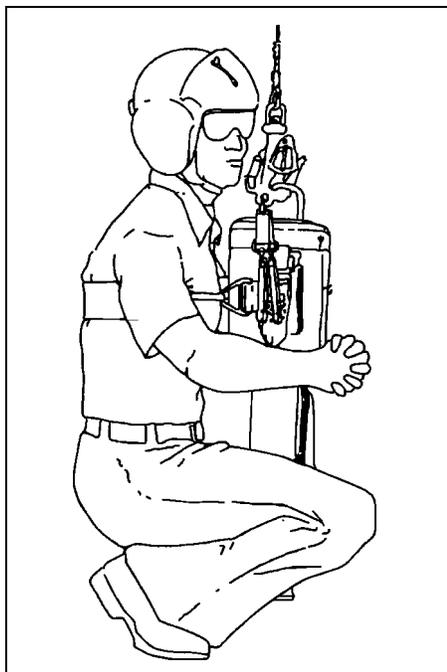


Figure 3-40. Instruct the Survivor to Wrap His/Her Arms Around the Flotation Collar and to Not Let Go Until Directed to by the CC

### 3.9.5 Rescue Net (Aviation Only)

The rescue net is a simple and safe rescue device that can accommodate up to two personnel during hoisting. When the rescue net is employed, the following procedures are to be used after the device is lowered into the water IAW Chapter 1, Paragraph 1.4.

#### 3.9.5.1 Single Survivor Rescue Using the Rescue Net

The RS shall:

1. Place the rescue net opening directly in front of the RS without disconnecting it from the rescue hook.
2. Place the survivor in a collar/equipment tow, and pull the survivor into the rescue net backwards. Position the survivor on either side of the rescue net, facing out.



The RS shall instruct the survivor to keep all body parts inside the rescue net at all times, and to not attempt to get out of the rescue net until directed by the CC.

3. The RS shall perform a safety check:
  - a. The RS shall check the rescue hook and rescue net lifting point for security:

- (1) Ensure the rescue net is hooked into the large rescue hook.
- b. Ensure that the survivor is completely inside the rescue net with his/her legs inside.
- c. The RS shall ensure the hoist cable or line is not fouled on the rescue net, debris, the survivor, or the RS.
4. The RS shall swim into the rescue net backwards and position him/herself into the rescue net facing out:
  - a. The RS places one arm across the net opening, ensuring that the survivor cannot fall out.
5. The RS signals “raise cable” (Chapter 6).
6. The survivor and/or RS shall be hoisted to the helicopter. Upon reaching the aircraft, the crewman will assist the survivor and/or RS into the aircraft using procedures outlined in Chapter 1, Paragraph 1.4.4.3.

### 3.9.5.2 Multiple Survivor Rescue Using the Rescue Net

The RS shall:

1. Place the rescue net opening directly in front of the RS without disconnecting it from the large rescue hook.
2. Position the survivors in the rescue net, facing out.



The RS shall instruct the survivors to keep all body parts inside the rescue net at all times, and to not attempt to get out of the rescue net until directed by the hoisting crewman.

3. The RS shall perform a safety check:
  - a. The RS shall check the rescue hook and rescue net lifting points for security.
  - b. Ensure that the survivors are completely inside the rescue net with their legs inside.
  - c. The RS shall ensure hoist cable or line is not fouled on the rescue net, debris, the survivors, or the RS.
4. The RS signals “raise cable” (Chapter 6).
5. The survivors shall be hoisted to the helicopter. Upon reaching the aircraft, the crewman will assist the survivors into the aircraft using procedures outlined in Chapter 1, Paragraph 1.4.4.3.

### 3.9.6 Rescue Basket

When the rescue basket is selected as the method of recovery, the following procedures shall be utilized after the basket is rigged IAW Paragraph 1.4.3.1.

**3.9.6.1 Survivor(s) Rescue Using the Rescue Basket**

The RS shall:

1. Signal the helicopter IAW Chapter 6, Fig. 6-1, Deploy rescue basket/net.
2. Await delivery of the rescue basket.
3. When basket has been placed in the water, within 5-10' of the swimmer and survivor, swim survivor to the basket.
4. Place the survivor in the basket in a sitting position.
5. Ensure arms and legs are completely inside the basket and instruct survivor to maintain this position.
6. Signal the aircraft ready to be hoisted IAW Chapter 6, Fig. 6-1.
7. The RS should stabilize the basket until the helicopter is directly overhead by grasping the basket and waiting until it can be vertically raised with minimum lateral movement.
8. Once the rescue basket is clear of the water, the RS shall swim to the aircraft 1 or 2 o'clock position and maintain eye contact with the rescue basket or assist other survivors as required.
9. When all survivors are recovered, the RS shall recover utilizing the method of his or her choice.

**Note**

Though designed for one survivor, under special circumstances it is the RS's discretion to determine how many survivors can safely be placed into the basket. Prior to deviating from the above procedures, the aircrew shall consider all pertinent factors, including, but not limited to: survivor size, environmental concerns, imminent dangers, and helicopter hoisting limitations.

## CHAPTER 4

# Inland Search and Rescue Procedures

### 4.1 INLAND SEARCH AND RESCUE REQUIREMENTS

While naval SAR-capable units have traditionally operated within the maritime environment, it is becoming increasingly necessary for those units to also operate inland. Because of increased air traffic density, military training areas both in the United States and abroad have been positioned inland, often over the most remote and rugged terrain. Additionally, military or civilian SAR agencies frequently request the aid of SAR-capable assets for inland emergency missions. While many of the procedures used in the maritime region also apply when operating inland, it is necessary to train and become proficient in the procedures unique to the inland environment. This is especially true if the operating area includes mountainous or rugged terrain.

This chapter discusses inland search and rescue procedures including those procedures unique to mountainous or rugged terrain. The degree of proficiency required in these procedures will depend on the individual unit's operating area. These procedures are to be the basis for inland SAR evaluations.

#### Note

Throughout this manual, the term rescue aircrewman (RA) will be utilized to delineate naval aircrewmen or SAR medical technicians (NEC 8401) performing rescue operations.

### 4.2 RESPONDING TO COMPOSITE FIBER AIRCRAFT MISHAPS

Many modern aircraft are composed of composite materials and may contain other products that may be harmful to the RA(s) if they are inhaled or come into contact with exposed skin. RA(s) are advised to obtain personal protective equipment (respirator, gloves, goggles, etc.) from their command and don prior to entering the affected area. In the event a RA is contaminated during a rescue, the exposed skin shall be washed as soon as possible, and a medical examination performed. All contaminated clothing and gear shall be decontaminated or replaced.



- Inhalation of composite material fibers resulting from aircraft fires or damaged aircraft materials may be harmful to rescue personnel. If smoke is present, rescue personnel shall be deployed upwind and approach the aircraft in a manner as to avoid any smoke or hazardous composite airborne fibers. Respiratory protection should be worn to the maximum extent possible.
- Regardless of the method of survivor recovery, when effecting a military SAR in the immediate vicinity of the aircraft crash site, extreme care shall be used due to the possibility of unexpended ordnance.

**Note**

For complete information on responding to composite fiber aircraft mishaps and associated dangers, see the current version of the “Naval SAR Training Lectures” CD-ROM, (Rescue Swimmer Occupational Hazards).

**4.3 MOUNTAIN OPERATIONS**

Mountain flying considerations such as meteorological conditions, site evaluations, and power available/power required are addressed in the type aircraft NATOPS manual, OPNAVINST 3130 (series), or in the National Search and Rescue Supplement to the International Aeronautical and Maritime Search and Rescue Manual.



- During all inland SAR evolutions (training and/or actual), power margin checks shall be conducted IAW applicable T/M/S NATOPS procedures.
- While conducting rappel operations in mountainous terrain, specifically near cliff faces, turbulence from rotor downwash may result in uncontrollable spinning of rappel crewmen at hover altitudes below 100 feet above ground level (AGL). This hazard is increased when rappelling with litters. Uncontrollable spinning may result in loss of consciousness, injury, or death to the RA if not arrested immediately.

**Note**

- Oxygen shall be available for all crewmembers in accordance with OPNAVINST 3710 (series).
- Use of signaling sleeves LSC P/N: 465 is recommended for all overland rescue operations that involve an RA being deployed to the survivor.

**4.4 RESCUE METHODS/RECOVERY METHODS**

There are five rescue methods that can be utilized:

1. Landing to effect a rescue
2. Rescue via one skid/wheel
3. Rescue via hoist
4. Rappelling
  - a. Short haul
5. Direct deployment.

#### 4.4.1 Landing to Effect a Rescue

The preferred overland rescue method is landing to effect a rescue. Landing to effect a rescue is more expeditious, reduces pilot/crew fatigue, and is the safest method of recovery.



Personnel shall avoid entering/exiting the aircraft in the direction of rising terrain in close proximity of the main rotor and tail rotor systems.

#### 4.4.2 Procedures for a Rescue by Landing

If the survivor's location is beyond the sight of the aircraft, the travel between the two should be kept to a minimum to reduce crew fatigue. In such instances, on the first trip to the survivor(s) the following gear should be carried:

1. Hand-held radio
2. Level A/B/C SAR medical kit (first aid kit)
3. Rescue/MEDEVAC litter.

When the survivor(s) is/are beyond the sight of the aircraft, the RA must keep the pilots apprised of the survivor(s) condition and requirements via the hand-held radio. The copilot may be required to aid the RA(s) in recovering the survivor(s).

#### 4.4.3 Rescue Via One Skid/Wheel

When topography excludes landing to effect a rescue, consideration shall be given to placing one skid/wheel in close proximity to the terrain or obstruction.



When performing a rescue via one skid/wheel, caution shall be used when placing the skid/wheel in direct contact with terrain. The possibility of dynamic rollover is greatly increased. In all cases, one skid/wheel landings shall be conducted IAW applicable T/M/S NATOPS procedures and local SOP.

#### 4.4.4 Rescue Via Hoist



- A belay shall be used in conjunction with the rescue hoist during all live practice hoist training evolutions above 10 feet AGL. When hoisting personnel during actual rescue operations, use of the belay system is highly recommended. Failure of the rescue hoist system without the safety of a belay system overland may result in serious injury or death to personnel on the hoist. Refer to Paragraph 4.4.4.3.1 for belay line rigging and 4.4.4.3.2 for belay line procedures.
- Terrain or foliage may prohibit landing to effect the rescue. In such cases, a hoist recovery is most advantageous. Even though rescue via hoist is not the most desirable method, it is a widely used rescue technique and training should be geared toward its use. On flights having a corpsman, the corpsman should be lowered first to aid the survivor. If no corpsman is present, the RA is lowered, and shall evaluate the survivor's medical condition to determine which type of rescue device is required. If the survivor is suspected of having head, neck, and/or back injuries, a rescue litter or appropriate immobilization device shall be used. Additional medical equipment/rescue devices may be lowered utilizing the rescue hoist or belay line.

#### Note

- If the RA rappels to the survivor(s), and a single-man hoist recovery is to be used, the rappel rope may be substituted as a tending line vice the trail line. This is achieved by attaching the rappel rope to the V-strap of the litter assembly utilizing a locking carabiner with a weak link incorporated (Figure 4-1).
- Refer to NAVAIR 13-1-6.5 for weak-link incorporation.
- When utilizing locking carabiners to hook up/attach equipment, the knurled fittings shall not be down and locked.



- Any locking carabiner that has been, or is intended to be, dropped from the aircraft or training tower shall be color-coded red.
- Red color-coded carabiners shall never be utilized to support personnel.
- An RA should be lowered through trees, or dense foliage only as a last resort (i.e., no clear area exists in the proximity of the survivor(s), and the condition of the survivor(s) appears to require immediate medical attention).
- The RA shall not to grab the rescue hook/rescue device until it has contacted the deck. Failure to ground the rescue hook/rescue device prior to contact with the RA may result in the RA receiving an electrical shock.

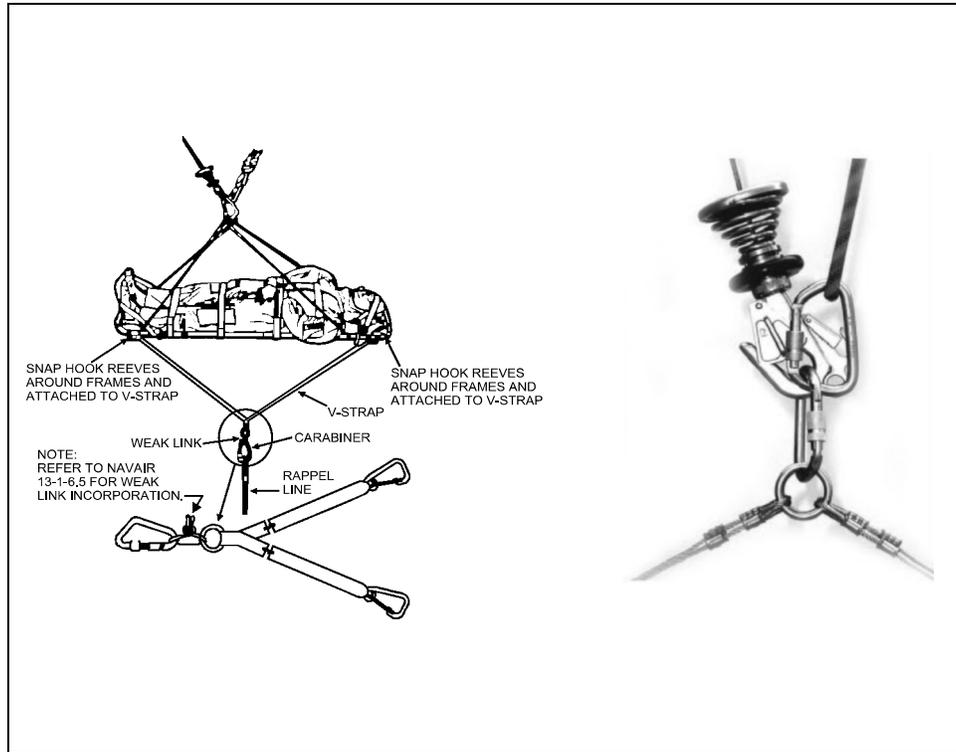


Figure 4-1. Single-Man Hoist to Sling Using Alternate Weak Link Assembly



In all cases where live bodies are being supported, hooked up, or attached, locking carabiners shall be utilized with knurled fittings down and locked. In all cases (whether the survivor is determined to be combative, panicked, or cooperative) the RA shall not hoist survivors from an overland or maritime environment without the proper application of the selected rescue device to include safety straps or safety devices outlined in this manual.

1. Survivor and/or RA are properly attached to rescue device.
2. Knurled fittings on locking carabiners are down and locked.
3. Carabiners are not side-loaded when weight is applied.
4. Hoist cable and belay line are not obstructed/entangled.



Securing the RA/survivor safely in the cabin shall be accomplished (once the RA and survivor are in the cabin) by the CC paying out just enough cable to close the cabin door to a point where it is resting lightly against the cable, disconnecting the RA and survivor, and securing them in the helicopter. Once the RA and survivor are secure, then CC opens the cabin door and stows the rescue hook. Ensure applicable T/M/S NATOPS airspeed restrictions are adhered to while the hoist cable is deployed from hoist assembly, and while the cabin door is not completely closed.

#### 4.4.4.1 Single-Man Hoist Recovery

1. Rappel harness (Figure 4-2):

##### **Note**

Only rappel-qualified RAs shall wear the rappel harness.

- a. Attach the large rescue hook into the locking carabiner on the rappel harness.
  - b. Connect the locking carabiner of the belay line through the lifting D-Ring of the rappel harness.
  - c. Ensure both knurled fittings on the locking carabiners are down and locked.
2. Integrated torso harness (Figure 4-3):
    - a. Attach the large rescue hook into the gated D-Ring of the survivor's integrated torso harness.
    - b. Attach the locking carabiner of the belay line into the gated D-Ring of the integrated torso harness.

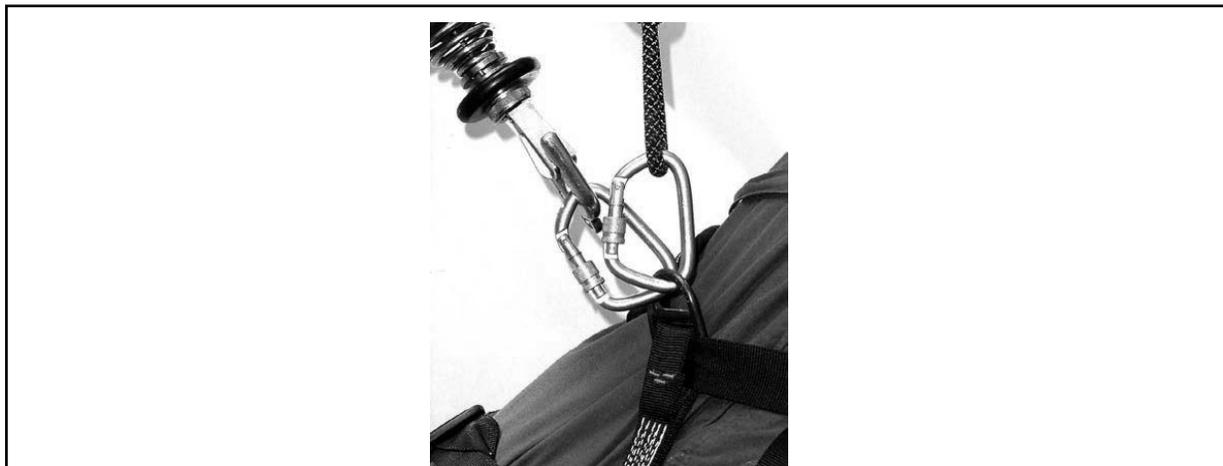


Figure 4-2. Single-Man Hoist to Rappel Harness

- c. Ensure the knurled fitting on locking carabiner is down and locked.

3. SV-2 survival vest (Figure 4-4):



To avoid any crushing injuries or chest constriction during hoisting, ensure that the chest strap on both the survivor and RA's SV-2 are loosened slightly prior to hooking into the large rescue hook.

- a. RA shall attach a locking carabiner into the lifting V-Ring of the SV-2, and attach the large rescue hook into the locking carabiner on the SV-2.
- b. Attach the locking carabiner of the belay line through the lifting V-Ring of the SV-2.
- c. Ensure the knurled fittings on the locking carabiners are down and locked.

4. CMU-30/CMU-33 Type I survival vest (AIRSAVE) (Figure 4-5):



- If the survivor is wearing a CMU-30/33 Type I survival harness, use extreme caution to ensure that the survivor's gated D-Ring and the RA's harness snap hook are not disconnected before hoisting.
- Upon reaching the aircraft door opening and while bringing in the survivor, ensure that the gated D-Ring and snap hook do not twist and inadvertently disconnect.

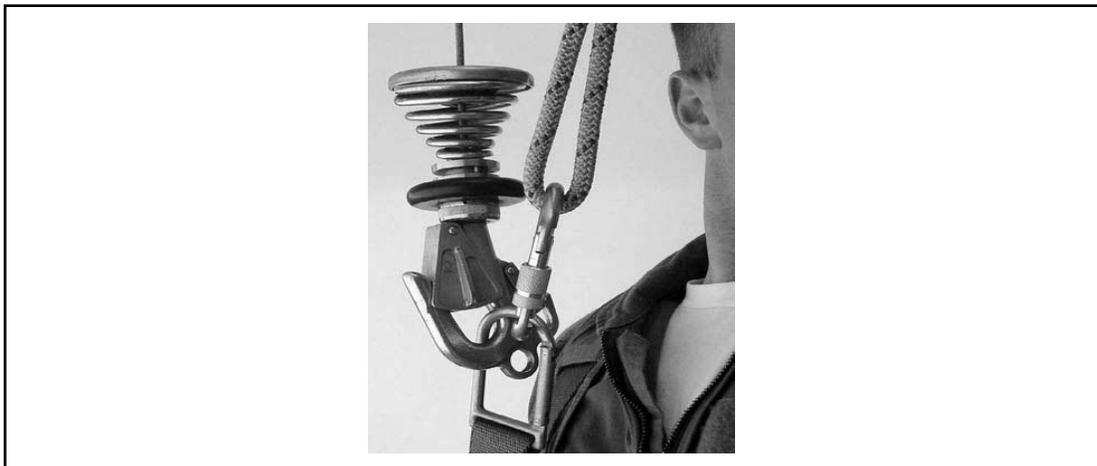


Figure 4-3. Single-Man Hoist to Integrated Torso Harness

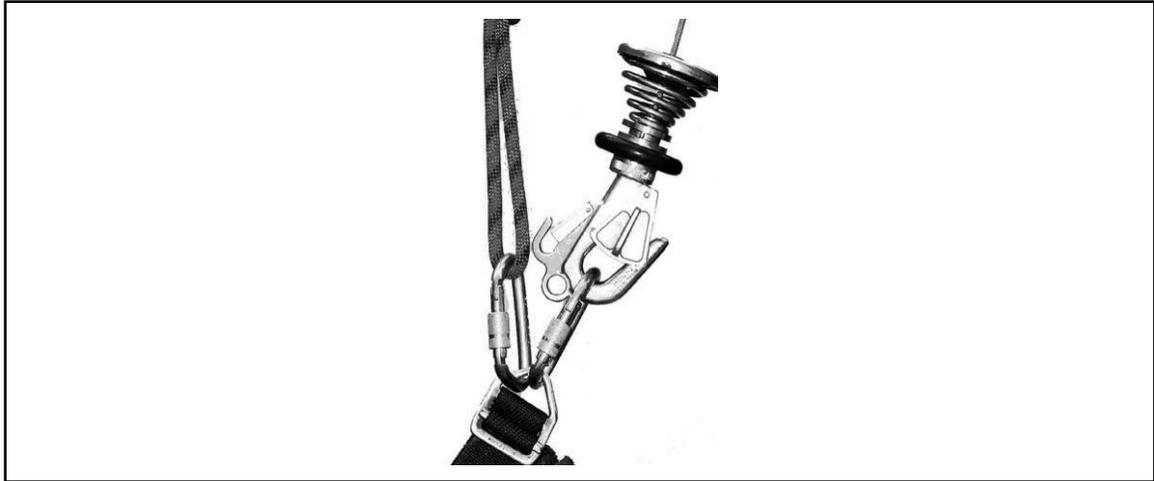


Figure 4-4. Single-Man Hoist to SV-2

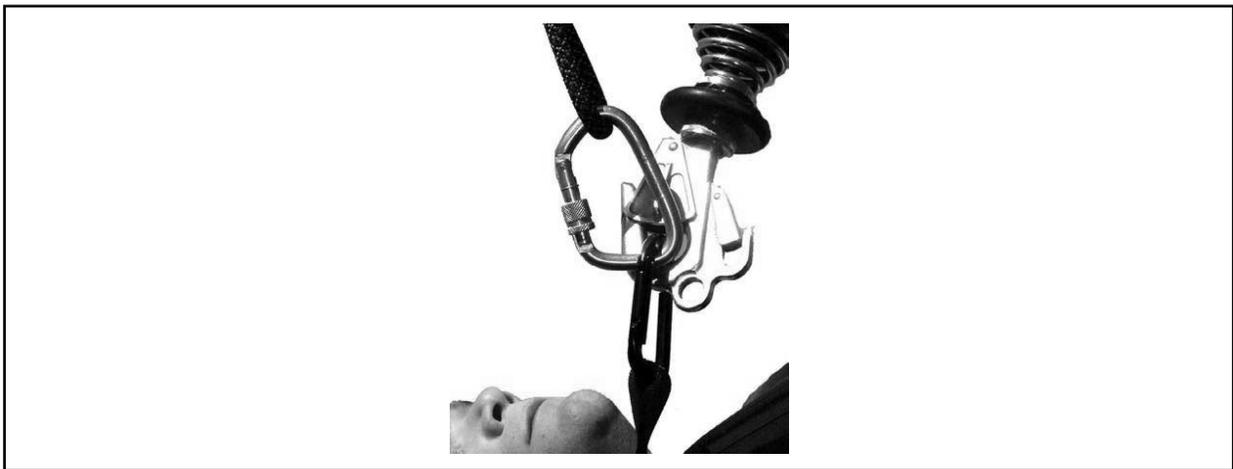


Figure 4-5. Single-Man Hoist to CMU-30/33 Type I

**Note**

- If not utilizing the rescue/MEDEVAC litter, the rescue strop or hoisting vest should be the primary recovery device of an UNINJURED survivor.
  - Due to the design characteristics of the CMU-30 and CMU-33 Type I survival vests, it is necessary to hook the survivor's gated D-Ring directly into the large rescue hook, regardless of what harness the RA is using. If dual hoisting is desired, the RA shall then hook the lifting V-ring from the RA's harness into the large rescue hook. If this procedure is not followed, i.e., the RA hooks his/her snap hook into the survivor's gated D-Ring, the survivor will hang very low, and may not be able to be hauled into the aircraft.
  - The gated D-Ring is located on the right shoulder strap of the CMU-30 and CMU33 Type I survival harness, and may be covered by a nylon restraining flap.
- a. Attach the large rescue hook into the gated D-Ring of the AIRSAVE vest.

- b. Attach the locking carabiner of the belay line into the gated D-Ring of the survival vest lifting harness.
  - c. Ensure the knurled fitting on the locking carabiner is down and locked.
5. Rescue strop—single-man hoist recovery (Figure 4-6):



- If the rescue strop/arm retaining straps are not utilized around both arms due to a severe injury to one arm, the RA shall attempt to communicate to the SRU the survivor's injuries and the deviation from normal rescue strop procedures prior to hoisting the survivor.
- If the rescue strop arm-retaining straps are not utilized around both arms due to a severe injury to one arm the RA shall accompany the survivor up the hoist to ensure the survivor does not fall out of the rescue strop.
- In all cases (whether the survivor is determined to be combative, panicked, or cooperative) the RA shall not hoist survivors from an overland or maritime environment without the proper application of the selected rescue device to include safety straps or safety devices outlined in this manual.

**Note**

- The arm retainer straps shall be outboard when placing the rescue strop on the survivor.
  - If the survivor has a severe injury to one arm, and other considerations preclude the use of a more appropriate rescue device, the arm retaining straps should be applied around the uninjured arm only.
- a. Place the rescue strop around the back and under each arm of the survivor.
  - b. Route the arm retainer straps over survivor's arms and under the rescue strop.
  - c. Ensure the arm retainer straps are as high up the survivor's arms (above the elbows) as possible.
  - d. Attach the large rescue hook into the lifting V-Rings of the rescue strop.
  - e. Attach the locking carabiner of the belay line through the lifting V-Rings of the rescue strop.
  - f. Ensure the knurled fitting of the locking carabiner is down and locked.
6. Hoisting vest (Figure 4-7):
- a. Place the survivor in the hoisting vest and fasten the torso snaps.
  - b. Attach the adjustable chest-lifting straps to the lower portion of the lifting V-Ring of the leg-lifting strap.
  - c. Attach the large rescue hook into the lifting V-Ring of the hoisting vest.

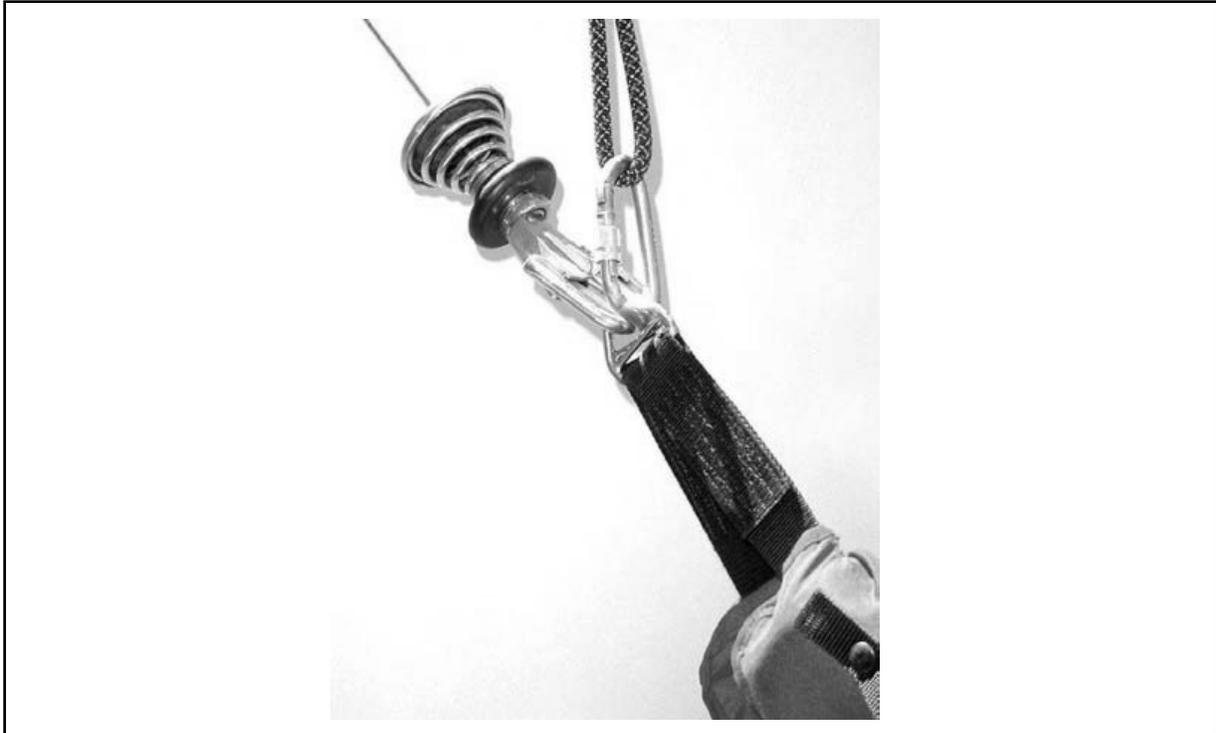


Figure 4-6. Single-Man Hoist to Rescue Strop

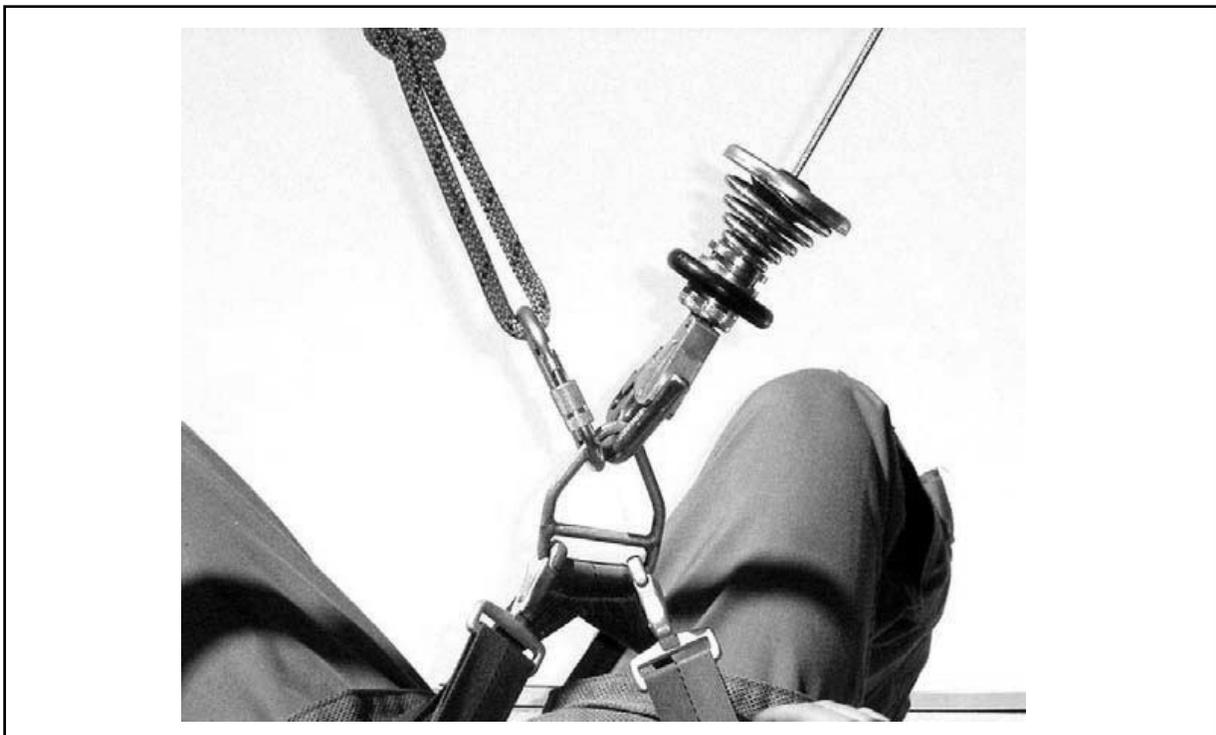


Figure 4-7. Single-Man Hoist to Hoisting Vest

- d. Attach the locking carabiner of the belay line through the V-Ring of the hoisting vest.
- e. Adjust the hoisting vest chest-lifting straps as necessary to ensure a level or upright position.
- f. Ensure the knurled fitting on the locking carabiner is down and locked.

7. Rescue/MEDEVAC litter (Figure 4-8):

- a. Attach a locking carabiner to both lifting rings on the litter sling assembly.
- b. Attach the large rescue hook into the locking carabiner. Attach the locking carabiner of the belay line into the locking carabiner on the litter sling assembly.
- c. Ensure the knurled fittings on the locking carabiners are down and locked.

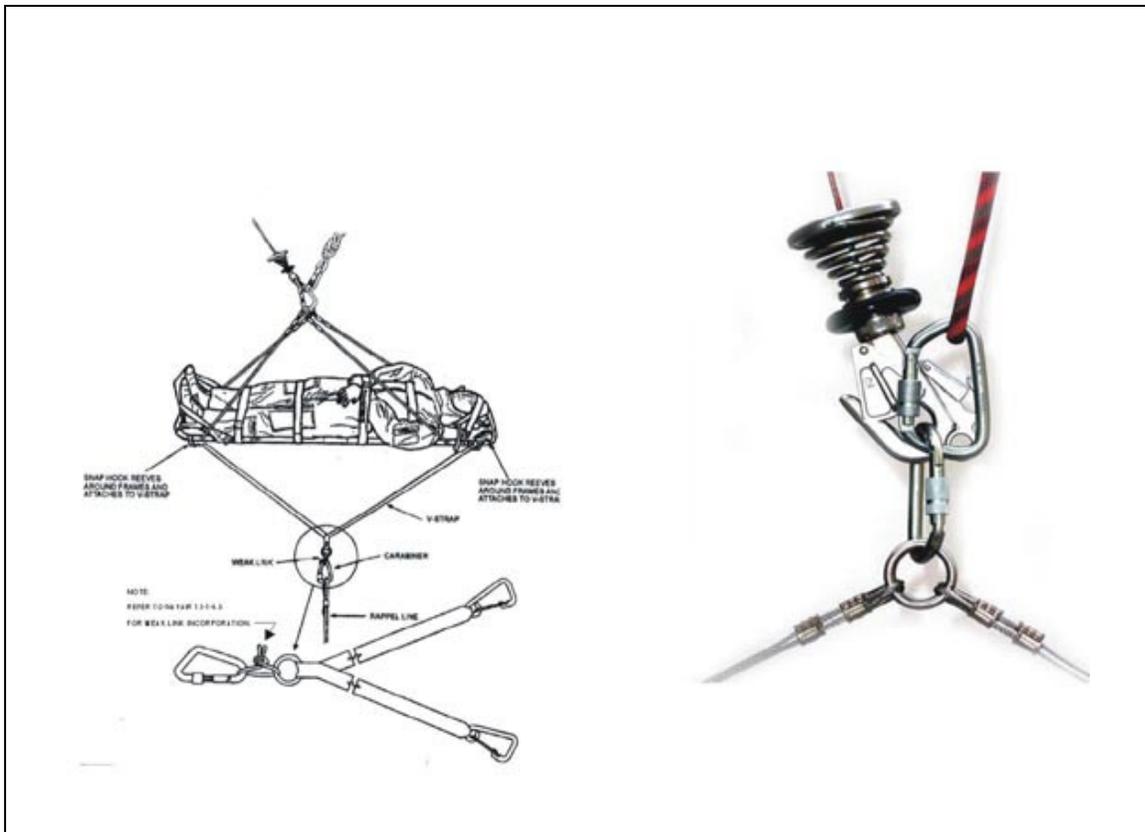


Figure 4-8. Single-Man Hoist to Rescue Litter



- The CC shall ensure that the tending line/trail line is disconnected and clear of the aircraft prior to clearing the PAC for forward flight.
- While conducting rappel operations in mountainous terrain, specifically near cliff faces, turbulence from rotor downwash may result in uncontrollable spinning of rappel crewmen at hover altitudes below 100 feet AGL. This hazard is increased when rappelling with litters. Uncontrollable spinning may result in loss of consciousness, injury, or death to the RA if not arrested immediately.

8. Rescue seat — single/dual hoist recovery (Figure 4-9):

**Note**

- One survivor at time, or one survivor with a RA, shall be hoisted using the rescue seat.
  - If hoisting an unconscious survivor with the rescue seat, the RA shall be hoisted along with the survivor.
- a. The belay line locking carabiner shall be attached to the rescue seat at the lifting eyelet.
  - b. After the rescue seat is on the ground, the RA shall pull down one fluke and have the survivor sit on it facing the rescue seat.
  - c. The RA shall pull the adjustable safety strap from the flotation collar pouch. The safety strap shall be routed under one arm, around the back, under the other arm, and attached to the V-Ring.



Figure 4-9. Single-Man Hoist to Rescue Seat

- d. Tighten strap until survivor is secured against the flotation collar.
- e. Have the survivor wrap his/her arms around the flotation collar.
- f. The RA shall complete a final safety check prior to signaling the aircraft “raise cable.”

**Note**

The RA shall ensure the survivor stays securely seated as tension is applied to the hoist cable.

- g. If the RA elects to be hoisted with the survivor, the RA shall wear the adjustable safety strap in the same manner as the survivor.
- h. The survivor and/or RA shall be hoisted to the helicopter. Upon reaching the aircraft, the CC shall assist the survivor and/or RA into the aircraft.

**4.4.4.2 Dual-Man Hoist Recovery**

- 1. Dual rappel harness (Figure 4-10):
  - a. Attach the large rescue hook into both locking carabiners of the rappel harnesses.
  - b. Attach the locking carabiner of the belay line through both locking carabiners of the rappel harnesses.
  - c. Ensure all three knurled fittings on locking carabiners are down and locked.

**Note**

If the RA is wearing a rappel harness, the survivor should be placed in a hoisting vest for the dual-man hoist recovery.

- 2. Rappel harness to SV-2:



Figure 4-10. Dual-Man Hoist to Rappel Harness

## NTTP 3-50.1

- a. The RA shall attach a locking carabiner into the lifting V-Ring of the SV-2 and attach the large rescue hook into the locking carabiner on the SV-2.
  - b. Attach RA harness locking carabiner to the large hook of the double rescue hook.
  - c. Attach the locking carabiner of the belay line through the locking carabiners of the SV-2 and RA harness.
  - d. Ensure the knurled fitting of all locking carabiners are down and locked.
3. SV-2 to integrated torso harness (Figure 4-11):



To avoid any crushing injuries or chest constriction during hoisting, ensure that the chest strap on the survivor's SV-2 is loosened slightly prior to hooking into the large rescue hook.

- a. RA shall attach one locking carabiner into the lifting V-Ring of the RA's SV-2.
  - b. Attach the large rescue hook into the locking carabiner of the RA's SV-2 and the gated D-Ring of the survivor's integrated torso harness.
  - c. Attach the locking carabiner of the belay line through the locking carabiner on the RA's SV-2 and the gated D-Ring of the integrated torso harness.
  - d. Ensure the knurled fittings of the locking carabiners are down and locked.
4. Dual SV-2 Recovery (Figure 4-12):



To avoid any crushing injuries or chest constriction during hoisting, ensure that the chest strap on the survivor's SV-2 is loosened slightly prior to hooking into the large rescue hook.

### Note

If the RA is wearing a rappel harness, the survivor should be placed in a hoisting vest for the dual-man hoist recovery.

- a. RA shall attach one locking carabiner to the lifting V-Rings of both the RA's and survivor's SV-2.
- b. Attach the large rescue hook into both locking carabiners.



Figure 4-11. Dual-Man Hoist SV-2 to Integrated Torso Harness

- c. Attach the locking carabiner of the belay line through both locking carabiners on the RA's and survivor's SV-2.
  - d. Ensure the knurled fittings of the locking carabiners are down and locked.
5. SV-2 to CMU 30/33 Type 1 (AIRSAVE) vest (Figure 4-13):



To avoid any crushing injuries or chest constriction during hoisting, ensure that the chest strap on the survivor's SV-2 is loosened slightly prior to hooking into the large rescue hook.

- a. Attach one locking carabiner into the lifting V-Ring of the RA's SV-2.
  - b. Attach the large rescue hook into the locking carabiner and gated D-Ring of the survivor's vest.
  - c. Attach the locking carabiner of the belay line through the locking carabiner on the SV-2 and the gated D-Ring of the survivor's vest.
  - d. Ensure the knurled fittings of the locking carabiners are down and locked.
6. Rappel harness to hoisting vest (Figure 4-14):
- a. Attach the large rescue hook into the harness carabiner.
  - b. Attach the belay line carabiner into the harness D-Ring.
  - c. Two additional carabiners will be needed to hook up the hoisting vest.

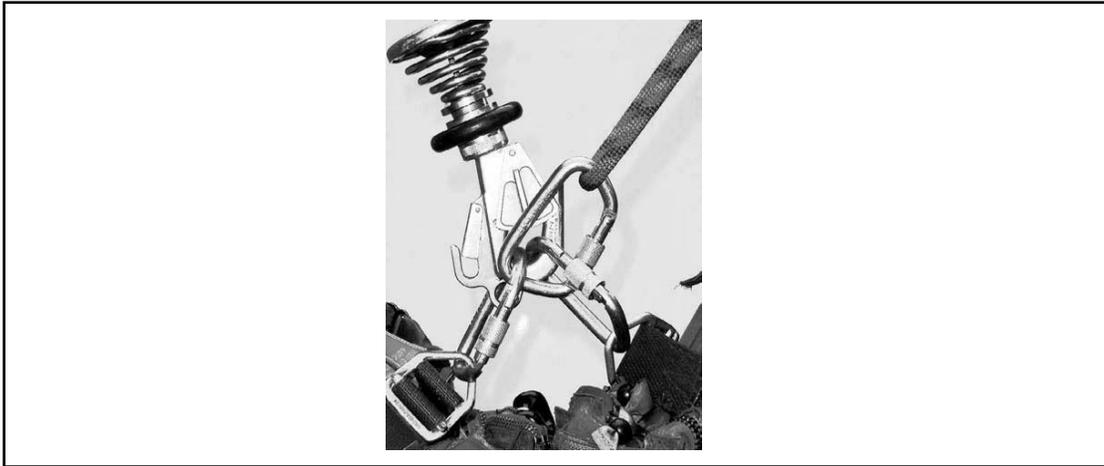


Figure 4-12. Dual-Man Hoist SV-2 to SV-2

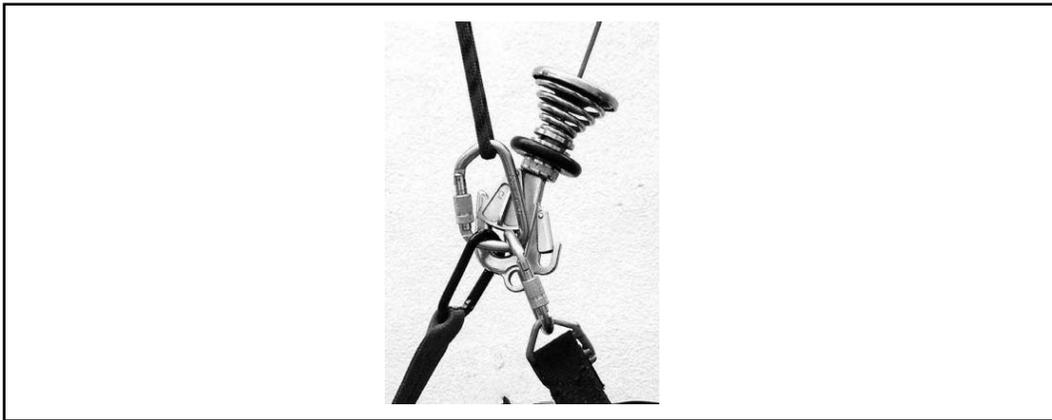


Figure 4-13. Dual-Man Hoist SV-2 to CMU-30/33 Type I (AIRSAVE) Vest

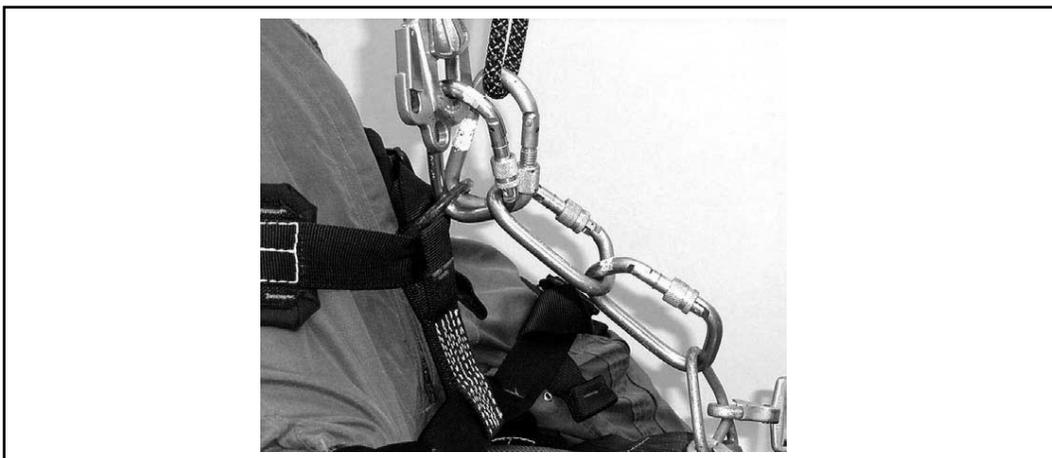


Figure 4-14. Dual-Man Hoist Rappel Harness to Hoisting Vest

- d. Attach the first additional carabiner to both the belay line and the harness carabiners on the outboard side of harness D-Ring with the gate down and locked.
  - e. Hook the second additional carabiner to the first additional carabiner “daisy chain” style, down and locked, with gate facing away from RA.
  - f. Hook the hoisting vest lifting ring directly into the second additional carabiner.
  - g. Ensure the knurled fittings on the locking carabiners are down and locked.
  - h. Straddle the victim while being hoisted.
7. Rappel harness and rescue/MEDEVAC litter (Figure 4-15):
- a. Attach the large rescue hook into harness carabiner.
  - b. Attach the belay line carabiner into the harness D-Ring.
  - c. Hook one additional carabiner into both the belay line and harness carabiners on the outboard side of the harness D-Ring.
  - d. Hook up both lifting rings from the rescue/MEDEVAC litter lifting slings directly to this carabiner.
  - e. All carabiner gates shall be down and locked.
  - f. Ensure the knurled fittings on the locking carabiners are down and locked.
  - g. Straddle litter while being hoisted.

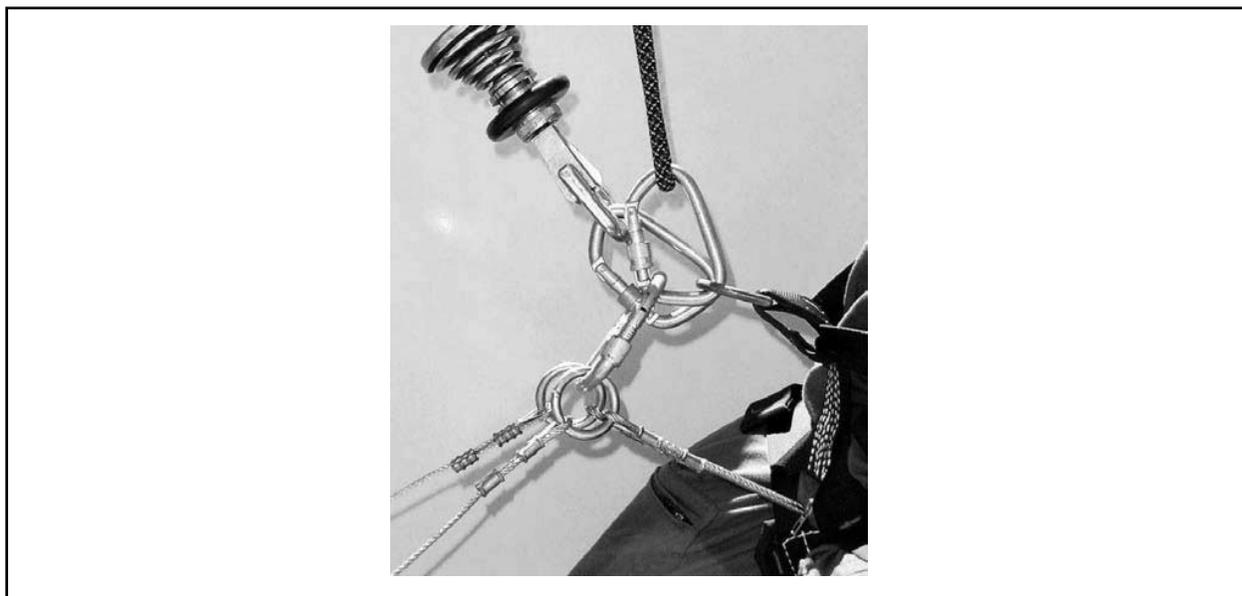


Figure 4-15. Dual-Man Hoist Rappel Harness to Rescue/MEDEVAC Sling Assembly

## **NTTP 3-50.1**

### **4.4.4.3 Belay Line**

#### **4.4.4.3.1 Belay Line Rigging**

The two methods used for rigging the belay line is the self-equalizing cordelette deck setup and red rappeling rings setup:

1. Deck setup equipment list:
  - a. 11 mm belay line (suitable length for evolution)
  - b. Carabiners, locking (6) minimum
  - c. Tubular nylon webbing (refer to Figure 4-39 for ring bend knot)
  - d. Anti-chafing blanket (locally manufactured, if required)
  - e. Pulley (if required)
  - f. Belay plate.
2. Red rappeling rings equipment list:
  - a. 11 mm belay line
  - b. Carabiners, locking (3) minimum, (4) if pulley used
  - c. Pulley (if used)
  - d. Belay plate
  - e. String or rip cord (2 feet).
3. Self-equalizing cordelette setup procedures:
  - a. Tie the bitter ends of the flat rope using a ring bend knot (Figure 4-39).
  - b. Install three carabiners to the deck in a triangle shape (center carabiner installed in the opposite direction of the rope or belay).
  - c. Route the flat rope through the three carabiners on the deck in a continuous loop (placing the ring bend knot approximately 6 inches away from the center carabiner (Figure 4-18).
  - d. Grasp the flat rope on the left and right side of the center carabiner and pull toward the remaining rope (Figure 4-19).
  - e. Connect a carabiner to each “V”-shaped loop, and ensure both carabiners are down and locked, facing opposite directions.
  - f. Remove the flat rope from the center and tie an overhand knot and reinstall (this will prevent the ring bend knot from passing through any carabiners).

### Note

Connect the belay using two carabiners on the setup (Figure 4-20). When connecting a rappel rope one extra carabiner is required (Figure 4-16).

#### 4.4.4.3.2 Belay Line Procedures

When operating the belay line, the following voice terminology and procedures shall be used. The terms “in belay,” “out belay,” “hold belay,” and “safety belay” are orders normally given by the CC to the RA operating (tending) the belay line. The order to “safety belay” may be given by any member of the crew and shall be challenged by and replied to among the RA(s), CC, or pilot.



- RA’s operating (tending) belay lines shall wear leather gloves suitable for line handling. Flight gloves are not designed for line handling and may result in rope burns to hands and subsequent inability to handle the belay line during normal or emergency procedures. RA’s operating (tending) belay lines shall maintain, to the best extent possible, a two handed grip on the belay line at all times unless a “safety belay” is applied.
- A “safety belay” shall be applied to the belay system during all short-haul evolutions. The RA shall ensure both the rappel rope and belay line are pulled taut and matched prior to performing safety belay procedures.
- It is imperative that the belay line is kept taut at all times while the hoist/rappel rope is stationary, being deployed, or being retrieved. In the event that the rescue hoist cable or rappel rope fails during the evolution, slack in the belay system would allow personnel on the hoist cable or rappel rope to fall at rates that may not be stoppable and could result in serious injury or death.
- In the event of an aircraft, personnel, or flight emergency during a belay evolution, the RA shall immediately perform “safety belay” procedures.

### Note

- Aircraft power availability, crew configuration, or the rescue mission may dictate that only one RA is available in the aircraft to run the hoist, rappel, and belay systems. Overland SAR missions using hoist, belay, and rappel systems can easily overtask a single RA.
  - During these situations, it is highly recommended that the pilot operate the rescue hoist with voice directions from the RA.
1. In-Belay. In-belay is used when RA pulls the belay line into the aircraft during hoisting or rappelling evolutions. The following in-belay procedures shall be used for in-flight or hover hoist recovery of personnel:
    - a. The CC or pilot directs “in-belay.”

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- b. The RA tending the belay line shall start by placing a belay line knot in the belay line, then pulling the belay line into aircraft, and reporting “in-belay.”
- c. The RA tending the belay line shall place a belay line knot every 10 feet (approximately) until personnel on the hoist are recovered into the aircraft or a safety belay is applied.

### Note

In order to tie the belay knot, it may be necessary to slow or stop the hoist.

- 2. Belay line knot (Figure 4-21). A belay line knot is a safety procedure used when pulling the belay line into the aircraft (in-belay) with personnel attached to the rescue hoist. In the event of an emergency while hoisting personnel into the aircraft, a belay line knot will stop the initial free fall of personnel on the hoist/belay line as the knot is pulled up against the belay plate, preventing further payout of line. A belay line knot shall be applied as follows:

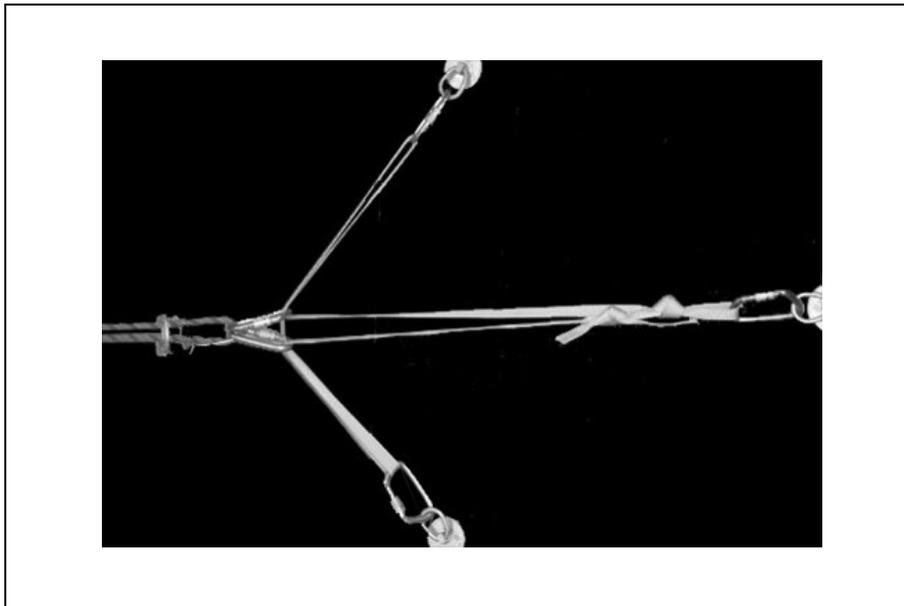


Figure 4-16. Self-Equalizing Cordelette Belay Line Set-Up



Figure 4-17. H-60 Red Rappel Rings Belay Set-Up

- a. After each 10 feet (approximately) of “in-belay,” rescue crewman performs “hold belay” procedure.
  - b. Two to three feet away from belay plate, form a loop in the belay line by doubling line back against itself.
  - c. Take newly formed loop, pull down, and wrap one complete turn around the doubled line to form another loop.
  - d. Pull knot taut enough to cinch knot. Do not overtighten knot so as to impede easy removal of the knot at a later time.
  - e. Continue knotting belay line every 10 feet (approximately) until personnel are recovered, or safety belay is applied.
3. Out-belay. Out-belay is a procedure used to let the belay line out of the aircraft by feeding through the belay plate. Out-belay is primarily used when deploying rescue personnel to the ground via hoist or rappel for immediate recovery of survivors.
    - a. The CC directs RA tending belay line “out-belay.”
    - b. The RA tending belay line feeds belay line from belay line bag into the belay plate at a rate to maintain a taut belay line with the hoist cable or rappel rope.
  4. Hold-belay (Figure 4-22). Hold belay is a braking procedure used to slow or stop the belay line from exiting the belay plate.
    - a. The CC directs “hold belay.”
    - b. The RA tending the belay line pulls the free end of belay line 180° opposite of line exiting the belay plate.
    - c. Hold belay line in this position until directed to “out belay”, “in belay”, or “safety belay.”
  5. Hands-free safety belay (Figure 4-23). Safety-belay is a knot applied at the belay plate to secure the belay system during short-haul evolutions or in the event of an emergency. Safety-belay shall be accomplished as follows:



Figure 4-18. Cordelette Set-Up



Figure 4-19. "V-Shapes" in Cordelette Deck Set-up



Figure 4-20. Belay Attachment to Cordelette Deck Set-Up

- a. The RA during normal procedures, or any other crewmember during an emergency, directs “safety belay.”
- b. The RA tending belay line shall acknowledge order “Roger, safety belay.”
- c. Perform “hold-belay” procedure.
- d. Grasp free end of belay line approximately 18–24 inches from belay plate and create a loop.
- e. Route loop through the two carabiners below belay plate and pull through.
- f. Grasp newly formed loop and tie a “Figure 8” Knot (Figure 4-21) around free end of the belay line.
- g. Cinch knot tightly.
- h. Report: “Belay is safety.”
- i. PAC shall acknowledge report: “Roger, belay is safety.”

#### **Note**

The CC shall use standard T/M/S NATOPS voice procedures for reporting the position of the hoist cable and the belay line.

#### **4.4.5 Rappelling**



- While conducting rappel operations in mountainous terrain, specifically near cliff faces, turbulence from rotor downwash may result in uncontrollable spinning of rappel crewmen at hover altitudes below 100 feet AGL. This hazard is increased when rappelling with litters. Uncontrollable spinning may result in loss of consciousness, injury, or death to the RA if not arrested immediately.
- An RA should be lowered through trees or dense foliage only as a last resort (i.e., no clear area exists in the proximity of the survivor(s), and the condition of the survivor(s) appears to require immediate medical attention).
- The RA shall not to grab the rescue hook/rescue device until it has contacted the deck. Failure to ground the rescue hook/rescue device prior to contact with the RA may result in the RA receiving an electrical shock.
- Nonlocking carabiners shall never be used to support live personnel.
- In all cases where live bodies are being supported, hooked up, or attached, locking carabiners shall be utilized with knurled fittings down and locked.
- In all cases (whether the survivor is determined to be combative, panicked, or cooperative) the RA shall not hoist survivors from an overland or maritime environment without the proper application of the selected rescue device to include safety straps or safety devices outlined in this manual.

**Note**

- The preferred rescue method in all overland cases is to land. A landing rescue is more expeditious, reduces pilot/crew fatigue, and is far safer than other rescue methods.
- Rappelling to a survivor is the most expeditious means of getting a RA to the deck when a landing is not practical. Rappelling has many advantages over hoisting. The ability of the RA to control the descent allows for a safer means of descending through trees, dense foliage, and rugged terrain. Rappelling reduces hover time, and the increased speed of the evolution combined with the advantage of controlled descent makes rappelling a valuable rescue technique in the inland rescue environment.
- Only rappel-qualified RAs shall conduct SAR rappelling operations IAW OPNAVINST 3130.6 (series).
- If the RA rappels to the survivor(s), and a single-man hoist recovery is to be used, the rappel rope may be substituted as a tending line vice trail line by attaching the rappel rope to the V-strap of the litter assembly utilizing a locking carabiner with a weak link incorporated (Figure 4-1).
- To expedite rescue operations, nonlocking carabiners may be utilized when hooking up/attaching equipment. When utilizing locking carabiners to hook up/attach equipment, the knurled fittings shall be down and unlocked.
- Any locking carabiner that has been or is intended to be dropped from AC shall be color-coded red and never be used to support personnel.

**4.4.5.1 Basic Rappelling Equipment**

- a. Tubular nylon webbing
- b. Red rappel rings
- c. “Sky Genie” rappel rope — (1) 250 and (1) 150 — storage bags
- d. “Sky Genie” descent control device

**Note**

Any locking carabiners used to attach the rappel rope to the storage bag shall be color-coded red.

- e. Locking carabiners
- f. Nonlocking carabiners
- g. Rappelling harness
- h. Pulley (if required)

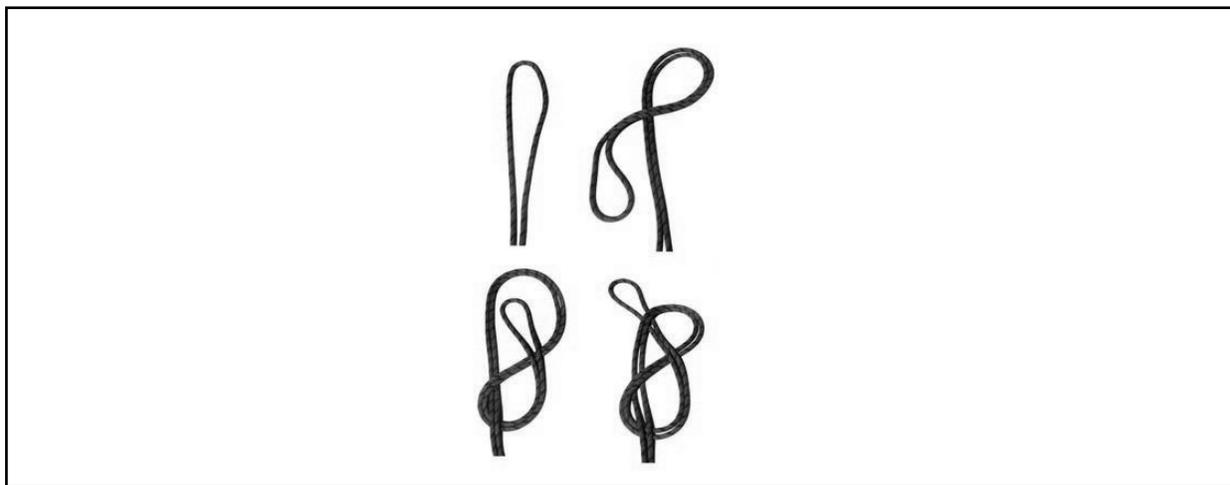


Figure 4-21. "Figure 8" Belay Line Knot

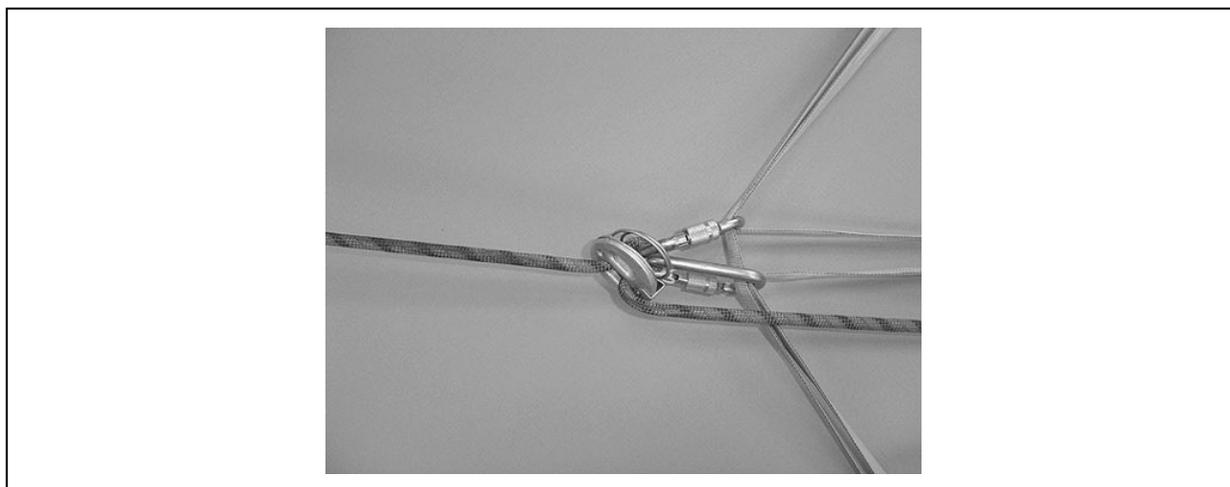


Figure 4-22. Hold Belay

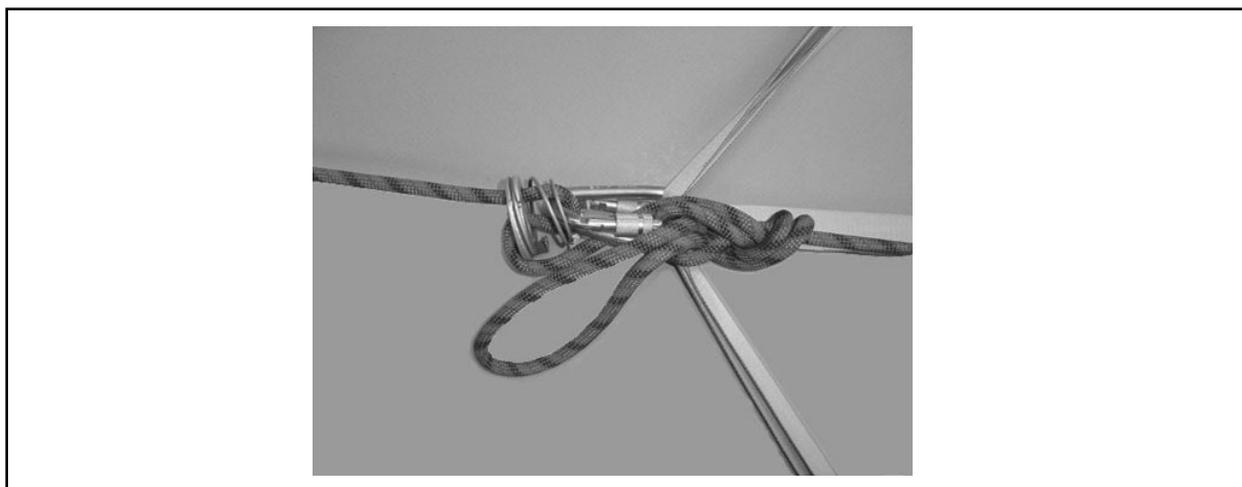


Figure 4-23. Hands-Free Safety Belay

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- i. Rappel gloves.

### Note

- For helicopter operations, rappel ropes shall not exceed 250 feet of length.
- Periodic inspection criteria for the equipment listed above is contained in NAVAIR 13-1-6.5, Aviation Crew Systems Rescue and Survival Equipment Manual.
- Each inland SAR command shall maintain sufficient equipment to conduct both training and actual SAR mission requirements.

### 4.4.5.2 Rappel Equipment Preparation

When the crew/HAC has determined that a rappel evolution is to be conducted, the HAC will direct the CC to rig the rappel station. The CC acknowledges the command, and both the CC and RA rig the rappel station:

1. Donning the rappel harness (Figure 4-24). The rappel harness is donned in the following manner:
  - a. Loosen the waist strap and the leg loops as far as possible but do not pull the webbing out of the buckle. Hold the harness in front of you to make sure the D-Ring loop and the waist buckle are in front and that the straps to the leg loops are not twisted.
  - b. Lower the harness until the leg loops are touching the deck. Step over the waist belt and into the leg loops. Pull the harness up to your waist and tighten the waist strap. The harness should have a space of 3 to 8 inches between the ends of the padded waist belt when the waist strap is pulled tight.
  - c. Adjust the leg loops to the desired height and tightness. The harness may be more comfortable tight.
  - d. Back up the buckle by tying the free end of the waist strap around itself at the spot just before the waist belt enters the buckle. Check to make sure that the waist strap is through the D-Ring loop. If possible the leg loop adjusting straps should also be backed up the same way.
2. Rappel station rigging. The three methods used for rigging rappel stations are: the hoist station, the self-equalizing deck setup, and the red rappel rings.
  - a. Hoist station (Figures 4-25 and 4-26):
    - (1) Rappel rope
    - (2) Locking carabiner
    - (3) Tubular nylon webbing flat rope.
  - b. Self-equalizing (Figure 4-16):
    - (1) Tubular nylon webbing flat rope
    - (2) Locking carabiners (6).



Figure 4-24. Donning the Rappel Harness

- c. Red rappel rings:
  - (1) Rappel rope
  - (2) Locking carabiner.
- 3. Descent control device rigging (Figure 4-28). The Sky Genie descent control device is rigged to the rappel rope in the following manner:



There shall never be fewer than 2-1/2 wraps on the descent control device; the rappel rope shall always enter one side of the bail and exit from the opposite.

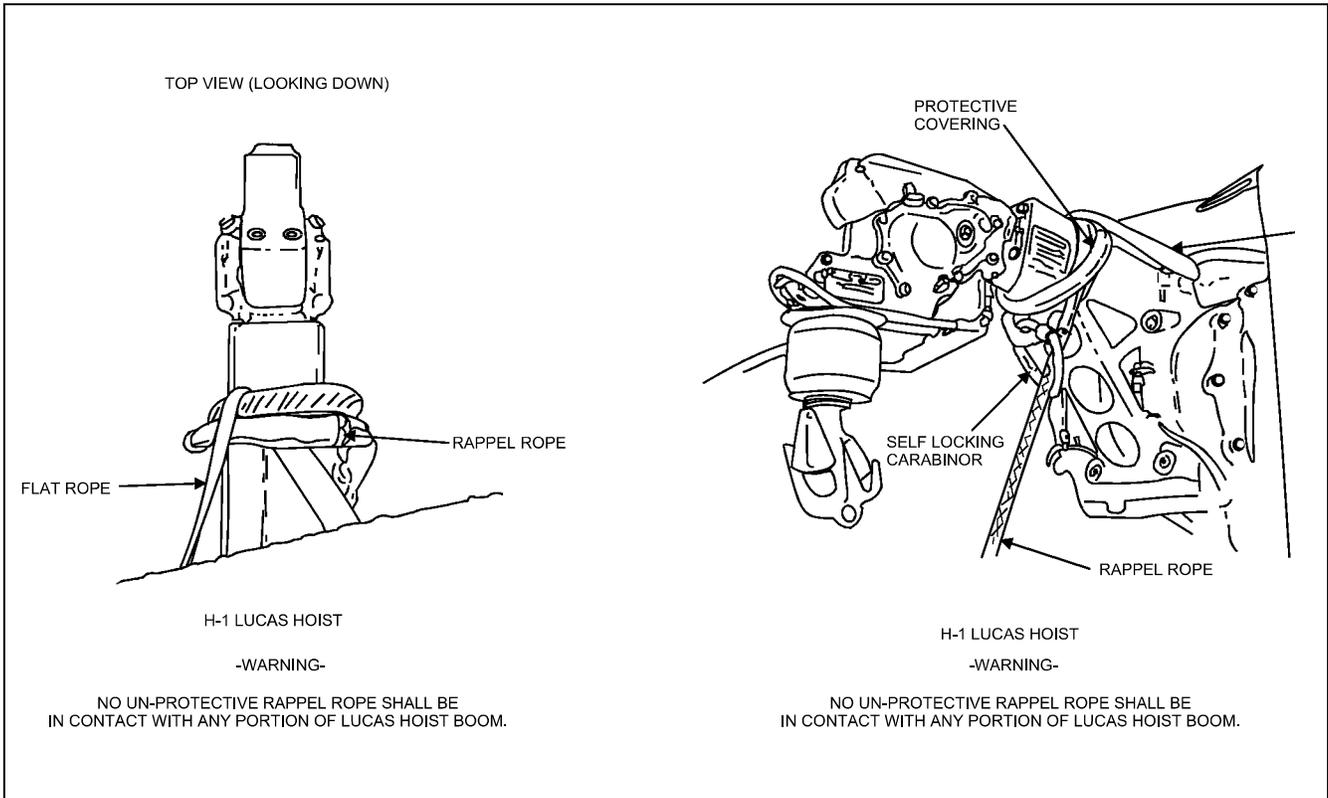


Figure 4-25. H-1 Hoist Rappel Station Rigging

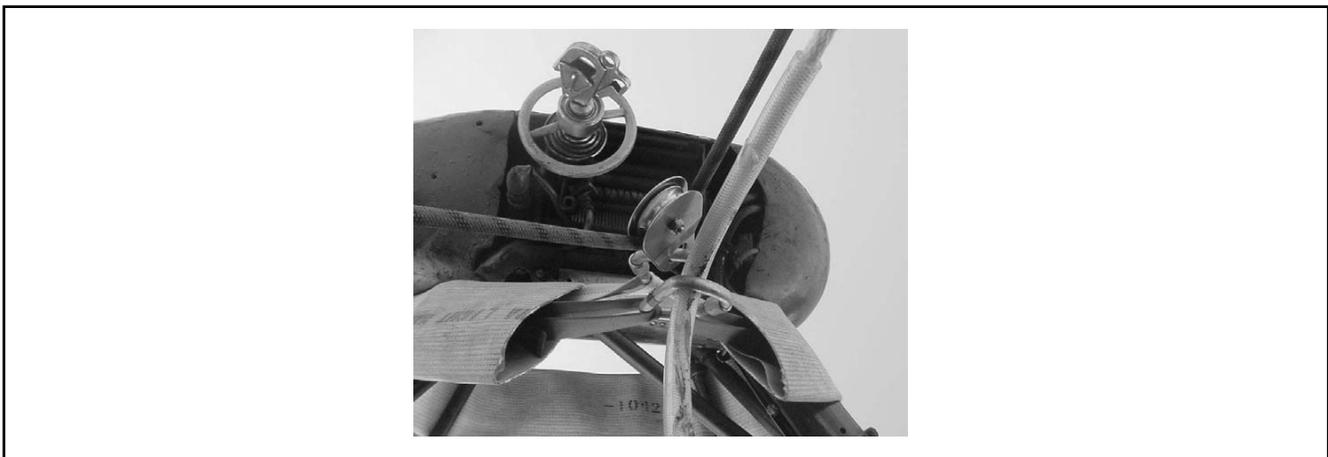


Figure 4-26. H-3 Hoist Rappel Station Rigging



Figure 4-27. H-60 Inland Rappel/Belay Set-Up



Figure 4-28. Descent Control Device Rigging

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- a. Unlock the locking screw at the top of the shaft.
  - b. Holding in the detent pin, remove the bail from the shaft.
  - c. Holding the shaft in either hand, with large eyelet up and locking screw facing toward you, route rappel rope through the top left slot of the shaft and route in the direction of arrow.
4. Sky Genie descent device/rappel harness/belay line hook-up procedure (Figure 4-29):
- a. Hook up the Sky Genie descent device to rappel harness with carabiner.
  - b. The gate of the carabiner will be down and locked, facing away from the rappelling RA.
  - c. For a right-handed RA, the open side of the Sky Genie bail should be on the rappelling RA's right.
  - d. For a left-handed RA, the open side of the Sky Genie bail should be on the rappelling RA's left.
  - e. Hook belay line carabiner to harness D-Ring on left side of harness carabiner for a right-handed RA, or right side of the harness carabiner for a left-handed RA (Figure 4-30).
  - f. Orient the gate of the belay line carabiner in the same fashion as the harness carabiner, down and locked.
  - g. Attach belay line to rappel harness D-Ring in the same manner.
5. Descent control device lock-offs. The three types of lock-offs that are used with the descent control device are as follows:
- a. Single lock-off (Figure 4-31). Use this lock-off in conjunction with the modified lock-off, and rig in the following manner:
    - (1) Grasp the free end of the rappel rope with the control hand close to the bail (8 to 10 inches).
    - (2) While keeping taut, bring it up and route it between the rappel rope and upper eyelet of the shaft, working from rappelling RA outward.



Figure 4-29. Standard Rappel Set-Up



Figure 4-30. Rappel Harness with Both the Descent Control Device and Belay Line Attached

- (3) Pull the rope down into an “X” in front of the Sky Genie and cover with thumb of the other hand.
- b. Double lock-off (Figure 4-32). Use this lock-off primarily for momentary hands-off operations, and rig in the following manner:
  - (1) Grasp the free end of the rappel rope with the control hand close to the bail (8 to 10 inches). While keeping taut, bring it up and route it between the rappel rope and the upper eyelet of the shaft, working from front to back.



Figure 4-31. Descent Control Device Single Lock-Off



Figure 4-32. Descent Control Device Double Lock-Off

- (2) While keeping the rappel rope taut, route the rappel rope between the rappel rope and upper eyelet of the shaft, completing a 360° wrap.
- c. Modified lock-off. Use this lock-off for short haul and/or prolonged hands off operations. This lock-off is accomplished in the following manner: (Figure 4-33)
  - (1) Complete a single lock-off:
    - (a) Grasp the free end of the rappel rope and route it through the locking carabiner(s) that are attached to the lifting D-Ring of the rappel harness. If the belay line is to be utilized, route the rappel rope through both carabiners, which are attached to the lifting D-Ring of the rappel harness.
    - (b) Form a loop with the rappel rope and loop it over the upper eyelet of the shaft.
    - (c) Pull free end down and taut.

**Note**

- When satisfied that both the rappel station and rappelling RA are rigged and ready for rescue operations, the CC reports: “aft station rigged for rappel.”
- When it is determined that a rescue via rappel is to be performed, the rescue crewmen should ready all necessary equipment that will be required during the rescue operation.
- The T/M/S NATOPS of the aircraft will determine actual rigging of the rappel station.

**4.4.5.3 Predeployment Preparations**

When directed by the CC, the rappelling RA shall don the rappel harness. The CC shall then attach the descent control device to the rappel rope, and then attach the rappel harness to the descent control device. The initial check is the last step prior to sending the rappelling RA out the door.



Ensure the descent control device has a minimum of a double lock-off before the rappelling RA attaches the rappel harness. The initial check should start at the rappel harness, and work up the rappel rope to the attachment point in the aircraft, and includes the following:

1. The rappel harness is properly worn and without twist.
2. The knurled fitting on the locking carabiner is down and locked, and facing away from the rappelling RA.
3. The descent control device is properly attached to the rappel rope with 2-1/2 wraps minimum; the rappel rope shall always enter one side of the bail end exit from the opposite. Ensure the locking screw is locked all the way down, then slightly back off (approximately 1/8 turn), and verify that detent pin is out. Ensure either a double or modified lock-off.
4. Carabiners on hoist stanchion(s) have knurled fittings down and locked and the chafing pendant on the rappel rope is through the lower carabiner on the hoist stanchion.
5. All locking carabiners (5) on the three-point equalizing setup have knurled fittings down and locked:
  - a. When complete, report “Initial check complete.”
  - b. After report of “initial check complete,” then the CC shall request “Permission to put rappelling RA out the door.” After permission the CC shall signal the rappelling RA by one tap on the chest to release the crewman’s safety belt. The rappelling RA then gets into position in the cabin door. At this time, all necessary gear (i.e., rescue litter, hoisting vest, etc.) shall be made available to the rappelling RA.

#### Note

Any equipment and/or rescue devices shall be attached to rappelling RA prior to the final check.



Figure 4-33. Descent Control Device Modified Lock-Off

#### 4.4.5.4 Rappel Deployment Procedures

There are three rappel methods utilized to deploy the RA overland.

1. Standard rappel:
  - a. Once established in a hover over the survivor, the CC shall ask permission to deploy the rappel rope (with the bag attached to the bitter end of the rope). When complete, the CC shall report: "Rope away."
  - b. When the rope has contacted the ground and no tangles are noted, the CC shall report: "I have a clean rope."
  - c. The CC shall then report: "Commencing final check." The final check consists of an initial check in addition to checking all equipment attached to the rappelling RA to complete the rescue mission (i.e., rescue litter, hoisting vest, belay line, etc.).
  - d. When the final check is completed, the CC reports: "Final check complete. Permission to rappel."
  - e. After permission is given from the PAC, the CC shall then tap the rappelling RA three times on the shoulder. The rappelling RA unlocks and leans back with both feet on the skid/deck edge while slowly feeding the rope through the Sky Genie. When the rappelling RA's head is lower than his feet, the rappelling RA slides his feet off of the aircraft. The CC shall report: "Rappelling RA away."
  - f. The rappelling RA shall descend to the ground using basic rappelling procedures.

#### Note

During descent, the rappelling RA shall continually scan the rappel scene and the aircraft to prevent fixation on the landing area and uncontrollability that may result in injury to the rappelling RA and/or damage to the rappel rope. A moderate descent rate shall be maintained.

- g. The CC shall continuously monitor the progress of the rappelling RA and keep the PAC informed. Once on the ground, the rappelling RA shall give the "I'm all right" signal (Chapter 6). The CC shall report: "Rappelling RA all right," and the rappelling RA shall then disconnect from the rappel rope (if applicable).
- h. The CC observes and reports: "Disconnecting rope."



If necessary to disconnect and drop the rappel rope, the CC shall remove the carabiner and ensure that the free end of the rappel rope is dropped clear of the survivor and rappelling RA.

- i. The CC shall then disconnect the rappel rope (if applicable) from the rappel station and drop it clear of the aircraft. Once the rappel rope is clear of the aircraft, the CC shall report "Rope away, clear for forward flight."
2. Bagless rappel. Where terrain hazards may cause loss or damage to the rappelling rope, it may be desirable to use the bagless method of rappelling.

- a. The rappel rope and storage bag will be attached to the rappel harness via one or two carabiners.
  - b. The rappel rope should feed out of the rappel bag on the same side of the rappelling hand. Approximately 3 to 4 feet of rappel rope is fed out of the rappel bag.
  - c. Rappelling is then conducted normally, as per standard rappel procedures (item 1).
3. Rappel with rescue litter (Figure 4-34):



- The CC shall maintain positive control of the rescue litter while attaching it to the rappelling RA. This shall be accomplished by creating a 3- to 6-foot loop (depending on T/M/S aircraft) with an extra piece of flat rope. Attach one end of loop to aircraft, attach other end of loop to rescue litter prior to attaching litter to RA (utilize carabiners to attach loop). Once RA is outside the helicopter and the litter is attached to him/her remove the carabiner end of loop attaching the litter to the deck and stow in aircraft.
  - While conducting rappel operations in mountainous terrain, specifically near cliff faces, turbulence from rotor downwash may result in uncontrollable spinning of rappel crewmen at hover altitudes below 100 feet AGL. This hazard is increased when rappelling with litters. Uncontrollable spinning may result in loss of consciousness, injury, or death to the RA if not arrested immediately.
- a. Hook up Sky Genie descent control device and belay line to rappel harness as established.

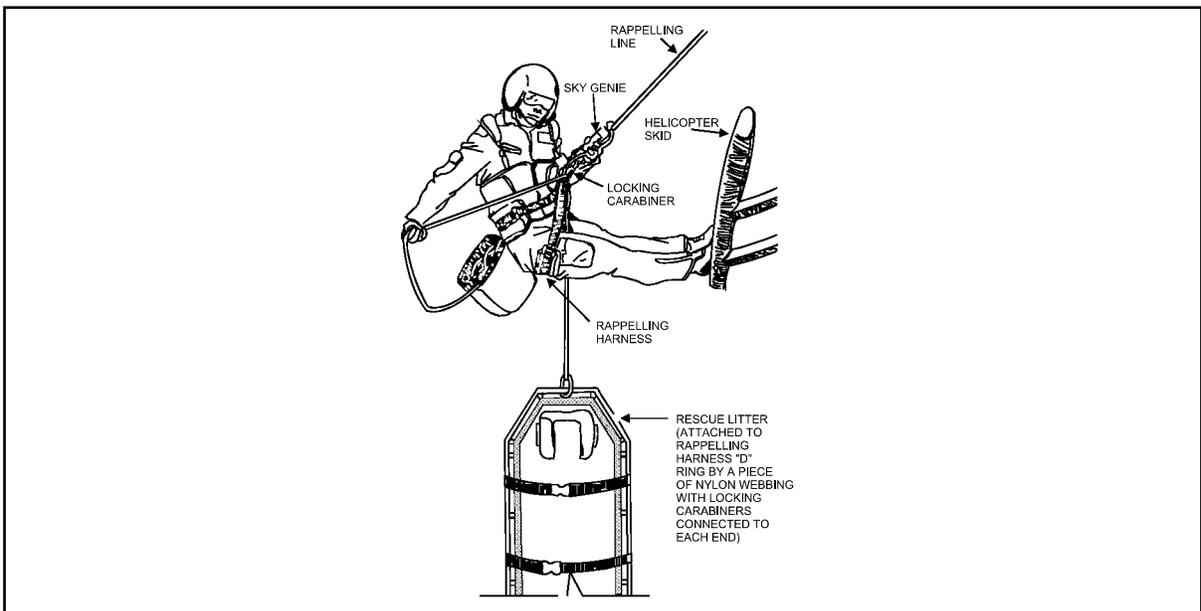


Figure 4-34. Rescue/MEDEVAC Litter below RA

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- b. Attach a piece of flat rope (approximately 6 feet) to the end of the litter with a carabiner or by looping the flat rope around the litter frame.
- c. The litter is lowered out the door and attached to the harness and belay line carabiners on the outboard side of the harness D-Ring. The carabiner shall be down and locked with locking collar on opposite side of the RA's rappel control hand.
- d. The litter is routed either between the rappelling RA's legs, or on the outboard side of the rappelling RA's legs opposite the rappelling RA's control hand.

### 4.4.5.5 Short Haul with Hoisting Vest

The short-haul evolution is a rescue method utilized for the extraction of a survivor on vertical or near-vertical terrain. It may also be used in cases where the hoist cable length is insufficient or the hoist is inoperative. The short-haul evolution terminates at a predetermined landing zone. This provides a rapid means of rescue from inaccessible locations.



A safety belay shall be applied to the belay system during all rappel short-haul evolutions. The CC shall ensure both the rappel rope and belay line are pulled taut and matched prior to performing safety-belay procedures.

### 4.4.5.6 Short-Haul Procedures

The belay line is attached after the rappelling RA is at deck edge/skid, placing the carabiner through the D-Ring on the rappel harness (refer to rappel procedures, Paragraph 4.4.5). The CC should position the aircraft to enable the rappelling RA the most direct access to the survivor. The pendulum-to-survivor location should be minimized to prevent injury to the survivor/rappelling RA. Upon the rappelling RA's arrival at the survivor, the rappelling RA shall give the "I'm all right" hand signal (Chapter 6) and lock-off. The rappelling RA shall then gather all excessive rope prior to connecting to the survivor. The CC shall safety the belay line upon the rappelling RA's arrival at the survivor. The rappelling RA shall connect the survivor as follows.



The RA must be ever vigilant with the survivor's head (cradling head of survivor with one arm) should the survivor be or become unconscious during the short-haul evolution.

1. Short-haul hookup with hoisting vest/rappel harness (Figure 4-35). Rappel down with Sky Genie and belay line attached as previously stated. To hook up the hoisting vest, two additional carabiners will be needed. Hook first additional carabiner into both belay line and harness carabiners on outboard side of harness D-Ring with gate down and locked on opposite side of the rappelling RA's control hand. Hook second additional carabiner into the first additional carabiner daisy-chain style. Hook hoisting vest lifting

ring directly into the second additional carabiner. Gate shall be down and locked facing outboard (away from rappelling RA). Straddle victim while transporting in short-haul.

2. Short-haul hookup with a rescue/MEDEVAC litter (Figure 4-36). Rappel down with Sky Genie and belay line attached as previously stated. To hook up MEDEVAC litter, one additional carabiner will be needed. Hook up one carabiner into both the belay line and harness carabiners; on the outboard side of harness D-Ring, hook up both lifting rings from lifting litter slings directly to this carabiner. The gate shall be down and locked on the opposite side of rappelling RA’s control hand. After the rappelling RA has connected to the survivor and has completed a “final check,” the rappelling RA shall signal the aircraft via radio or hand signal “Ready for pickup” (Chapter 6).



**CAUTION**

During short-haul evolutions, the aircraft should not exceed 40 knots indicated air speed, or T/M/S NATOPS restrictions; whichever is lower.

**Note**

If the RA determines a short haul is needed after rappelling without the belay, the CC shall lower the belay rope to the rappelling RA utilizing a piece of tubular nylon webbing looped around rappel rope, connected to a locking carabiner. Once the belay rope has reached the rappelling RA, the rappelling RA should disconnect the rappel rope locking carabiner from the tubular nylon webbing and connect it into the D-Ring on the rappel harness. Ensure the gate on the locking carabiner is down and locked and facing away from the rappelling RA. The rappelling RA shall then give a “thumbs up” signal to the CC.



Figure 4-35. RA and Survivor (Hoisting Vest) Short Haul



Figure 4-36. RA and Survivor (Rescue/MEDEVAC Litter) Short Haul

- a. The CC shall then position the aircraft directly over the RA/survivor and, using standard voice procedures, direct the aircraft up while maintaining adequate clearance of all obstacles.
  - b. After clearing all obstacles, the rappelling RA shall give a “Clear for forward flight” signal (Chapter 6). The CC shall continuously monitor the entire evolution, keeping the PAC informed as to the progress and positioning of the RA. The rappelling RA shall ensure adequate altitude is maintained by using radio or hand signals.
3. Options to terminate short haul:
- a. Landing. The CC shall use standard voice procedures for directing the aircraft to the predetermined landing zone. Upon descent, the rappelling RA gives distance to ground hand signals to the CC (Chapter 6). Once the rappelling RA is on the deck, the rappelling RA shall give the “I’m all right” hand signal and disconnect from the survivor and belay line. Once disconnected, the CC shall retrieve the belay line in the aircraft and disconnect the rappel rope as per Paragraph 4.4.5. The CC shall then report: “Clear of all ropes and lines.”
  - b. In-flight hoist recovery. The CC shall lower the hoist cable to the rappelling RA utilizing a piece of tubular nylon webbing looped around rappel rope, or both rappel and belay ropes connected to a locking carabiner, which is connected into the large rescue hook.

Once the rescue hook has reached the rappelling RA, the rappelling RA should keep the locking carabiner connected to the tubular nylon webbing and connect it into the carabiners attached to the D-Ring on the rappel harness. Ensure the gate on the locking carabiner is down, locked, and facing away from the rappelling RA. The rappelling RA shall then give a “thumbs up” signal to the CC. As weight is applied to the hoist cable, ensure the carabiners do not side load. As the rappelling RA is being hoisted, he/she shall gather all excessive rappel rope while the CC brings in excessive belay line.

- (1) Hook-up procedures for single-man hoist recovery (harness):

- (a) Attach the large rescue hook to the locking carabiner connected into the lifting D-Ring of the rappel harness.
  - (b) Connect the locking carabiner of the belay line into the lifting D-Ring of the rappel harness.
  - (c) Ensure the gates on the locking carabiners are down, locked, and facing away from the rappelling RA.
- (2) Hook-up procedures for dual-man hoist recovery (harness/hoisting vest):
- (a) Attach large rescue hook into the harness carabiner.
  - (b) Attach belay line carabiner into the harness D-Ring.

**Note**

Two additional carabiners will be needed to hook up hoisting vest.

- (c) Attach first additional carabiner into the both belay line and harness carabiners on the outboard side of harness D-Ring with gate down and locked.
- (d) Hook the second additional carabiner into the first additional carabiner daisy-chain style, with gate facing away from RA.
- (e) Hook hoisting vest lifting ring directly to second additional carabiner.
- (f) All carabiners shall be down and locked. Straddle victim while hoisting.

**Note**

Figure 4-37 shows the rescue hook forward of the Sky Genie. The RA may choose to place the rescue hook either forward or aft of the Sky Genie.

- (3) Hook-up procedures for dual-man hoist recovery (harness/litter):
- (a) Attach large rescue hook into the harness carabiner.
  - (b) Attach belay line carabiner into the harness D-Ring.
  - (c) Hook one additional carabiner into both the belay line and harness carabiners on the outboard side of the harness D-Ring.
  - (d) Hook up both lifting rings from the litter lifting slings directly into this carabiner.
  - (e) All carabiner gates shall be down and locked.
  - (f) Straddle the litter while hoisting.

**Note**

Figure 4-38 shows the rescue hook forward of the Sky Genie. The RA may choose to place the rescue hook either forward or aft of the Sky Genie.

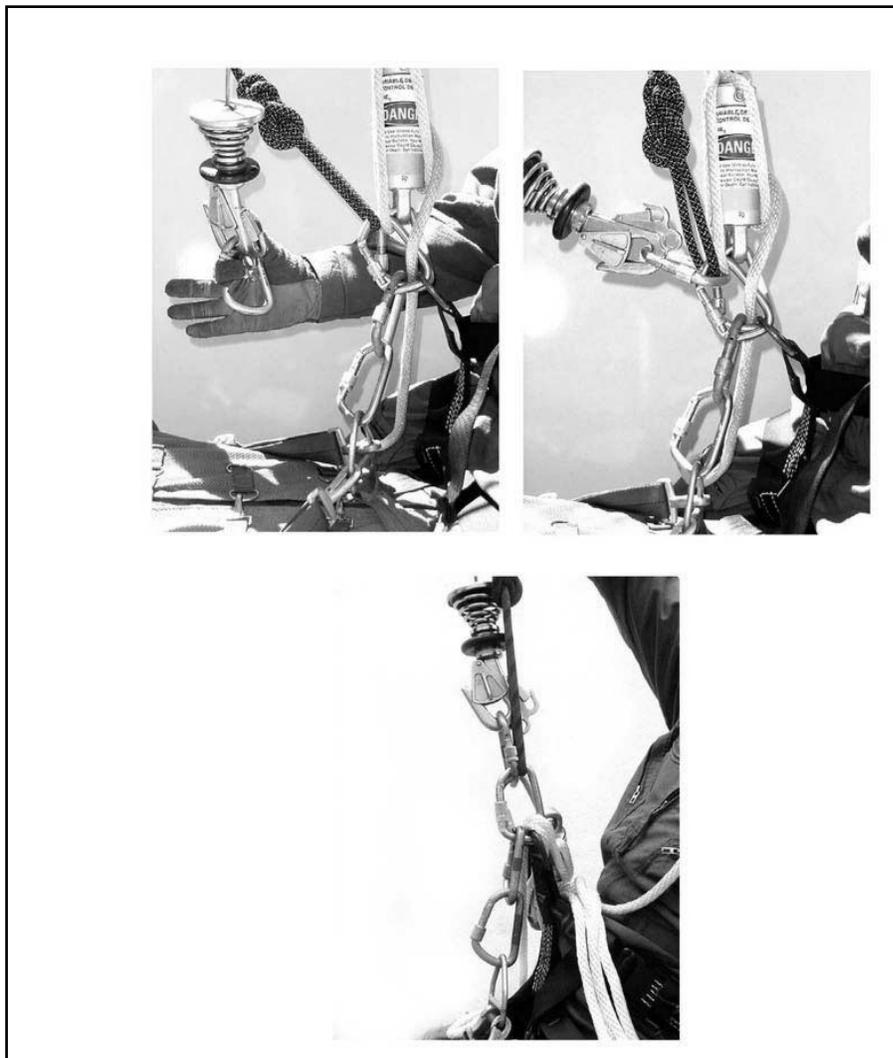


Figure 4-37. Dual-Man In-Flight Hoist Recovery (Hoisting Vest)

4. Hover hoist recovery. Upon establishing a hover, the CC uses the same procedures outlined for in-flight hoist recovery.



All power margin checks shall be IAW applicable T/M/S NATOPS for all training and actual SAR missions.

**Note**

The HAC shall determine which method of short haul termination shall be accomplished with careful consideration to all aircraft operational and environmental conditions.

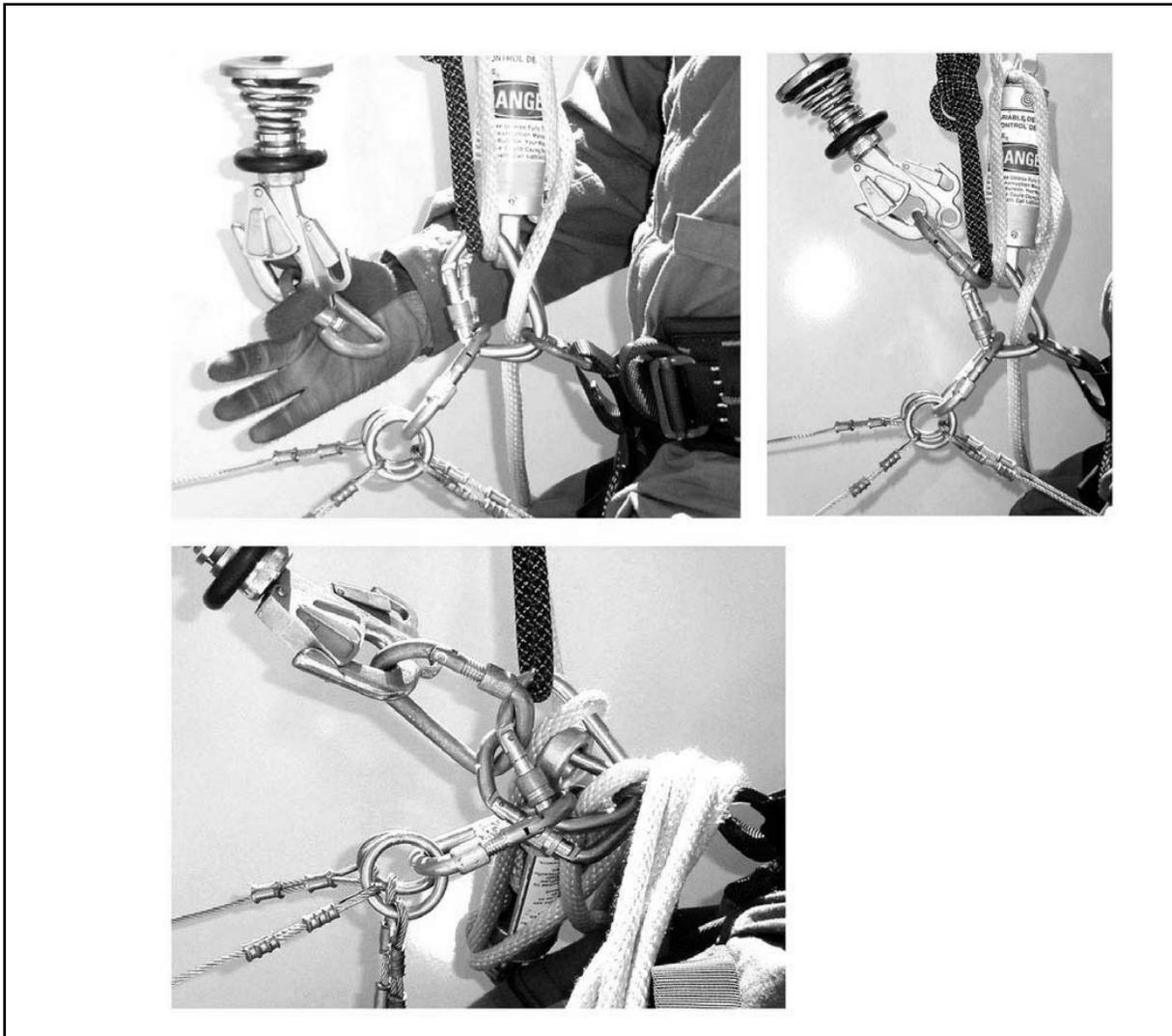


Figure 4-38. Dual-Man In-Flight Hoist Recovery (Rescue/MEDEVAC Litter)

#### 4.4.6 Direct Deployment Procedures

The DD method may be used to perform rescues inland. In mountainous and/or cliffside/vertical environment, recovery is accomplished by hovering above the object and maneuvering the aircraft to hold the RA in positive contact with the face of the object. The RA uses the TSH and remains attached to the hoist cable throughout the evolution with the cable supporting the RA's weight. The RA can then traverse the face as necessary to reach the survivor. Precise crew coordination and thorough planning are paramount to a successful vertical rescue operation.



- The QS shall only be used in conjunction with the TSH for DD recovery of survivors.
- The decision to use DD procedures on a survivor with a known or suspected head, neck, spinal, or other severe injury should only be exercised when the use of traditional survivor recovery procedures would place the lives of the RA and/or survivor at greater risk.
- DD procedures should not be used on aviators who have ejected from aircraft. It is strongly recommended that during an actual overland rescue, the RA and survivor should be belayed unless doing so will put the survivor or the RA at greater risk.
- During all overland DD training evolutions, the RA shall be belayed utilizing current authorized procedures. For overland/cliffside rescues the hoist shall be accomplished at an altitude that will enable the pilot to maneuver the helicopter clear of the RA/survivor in the event of an aircraft emergency.
- A site evaluation should be accomplished using high- and low-reconnaissance techniques and considering effects such as orographic turbulence, loss of wind effect behind obstacles, and power available. Emergency procedures including departure route shall also be determined/briefed prior to initial approach.

#### **Note**

- Use of the term “direct deployment” always refers to the RA wearing a TSH in conjunction with a QS assembly. The significant difference in DD from the traditional RA deployment/survivor recovery procedure is that the RA never unhooks from the rescue hook during the entire rescue evolution.
  - All power margin checks shall be IAW applicable T/M/S NATOPS manuals for all training and actual SAR missions.
  - The use of signaling sleeves (LSC P/N: 465) is highly recommended for all DD operations.
  - If being hoisted to a vertical surface, the aircrew shall assess the situation and hoist the RA in a way that avoids an approach that endangers the survivor with the hoist cable, falling debris, rotor wash, or other hazards.
  - The TSH shall not be used as a rappelling harness.
  - The standard rescue strop shall not be utilized for DD procedures (except when performing a double-lift recovery).
1. Once the survivor has been located, the crew determines together whether DD is the best method of rescue.



When performing cliffside or steep terrain direct deployment rescues the RA should not be placed directly above the survivor; placing the RA directly above the survivor could cause rocks or other debris to strike and cause further injury to the survivor.

**Note**

The RA should include specific landmarks on the prebriefed route, as it may be difficult to maintain visual contact with the survivor once in positive contact with the vertical surface. This route should avoid exposing the survivor to falling debris, rotor wash, or any other hazards. Avoid overhangs that may contact and damage the hoist cable.

2. Prior to deploying to a vertical surface, the CC and RA shall identify a route from the point of positive contact with the surface, to the survivor. The PAC shall also be involved, ensuring that he/she is clear on the intended route.
3. Upon completion of the site evaluation, route planning, and emergency procedure brief, the PAC commands: “Rig for direct deployment.”
4. The CC responds: “Roger, rigging for direct deployment.”

**Note**

Open cabin door/retrieve rescue hook IAW applicable T/M/S NATOPS procedures/limitations.

5. The CC brings the rescue hook into the helicopter for RA hookup.



Being hooked into more than one safety device (gunners belt, crew seat restraint belt, large rescue hook) at one time may be hazardous to the RA should the helicopter encounter an emergency and have to ditch. The CC shall ensure that the RA is immediately released from the crewman’s safety belt once the RA is properly hooked in to the large rescue hook and the CC has positive physical control of the RA.

6. The RA, wearing a properly secured crewman’s safety belt, sits on the deck facing the cabin door and hooks into the large rescue hook in the following order:
  - a. TSH lifting V-Ring (always first)
  - b. Rescue strop (double-lift recovery only, Paragraph 3.8)

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- (1) RA routes the rescue strop over the preferred shoulder and maintains control of it until it is utilized on the survivor.

c. QS (detachable lifting strap always with “RED” band outboard and always last).

### Note

The detachable lifting strap of the QS can be identified by the red band of webbing located next to the detachable lifting strap’s V-Ring assembly.

- (1) Ensure the detachable lifting strap is routed through the friction lock prior to hookup.
- (2) Ensure the detachable lifting strap V-Ring (identified by red band) is always the last object hooked up to the large rescue hook.
- (3) The CC hooks belay line to lifting V-Ring on the RA’s TSH. The belay line carabiner shall be down and locked away from RA.

### Note

The RA should slide the QS friction keeper as far out as possible, ensuring as large an opening as possible is maintained in the QS assembly. This will make employment of the QS over the survivor’s head and shoulders easier.

- (4) RA routes the QS over the preferred shoulder and maintains control of it until employed on the survivor.

d. When RA is satisfied, gives the CC the “thumbs up” signal.

7. CC grabs the back of the RA’s TSH and taps the RA once on the chest:

a. Upon receiving the signal, the RA releases the crewman’s safety belt.

8. The CC reports: “Rescue Station rigged, standing by for direct deployment.”

9. The PAC reports: “Stand by for manual approach to direct deployment.”

10. The CC responds: “Roger.”

### Note

The CC should verbally position the aircraft to a place that allows the RA to maintain positive contact with the vertical surface. Once in positive contact with the vertical surface, the RA maintains a rappelling position and does not climb, instead using the helicopter to reposition vertically. Position the aircraft in relationship to the survivor using cliff-walking techniques and appropriate hand signals. Once the RA is at the desired distance below the helicopter, he/she becomes an extension of the helicopter; hoist movement should be kept to a minimum.

11. The CC directs the helicopter into position; the HAC establishes a steady hover over the survivor and commands: “Stand by to lower RA.”

12. CC maintains positive control of RA and directs the RA to the cabin door. RA sits in cabin door.
13. CC taps the RA three times on the shoulder; upon receiving a “thumbs up” signal from the CC, the RA reports: “RA ready.”
14. The PAC commands: “Lower RA.”



It is essential that the RA arrive at the prebriefed position in a safe, controlled, and positive fashion. To establish initial positive contact, it is preferred to have the RA hoisted down from a stable hover over the prebriefed position. Positioning the helicopter horizontally with the RA at the end of the cable could cause the RA to lose positive and controlled contact with the surface.

15. The CC hoists the RA off the deck:
  - a. The RA adjusts the straps of the TSH for proper fit and comfort when satisfied, gives the CC a “thumbs up” signal meaning: “ready to be hoisted.”



It is imperative that the belay line is kept taut at all times while the hoist/rappel rope is stationary, being deployed, or being retrieved. In the event that the rescue hoist cable or rappel rope fails during the evolution, slack in the belay system would allow personnel on the hoist cable or rappel rope to fall at rates that may not be stoppable and could result in serious injury or death.

#### **Note**

As the RA is being lowered, he/she shall try to maintain visual contact with the survivor at all times.

- b. The CC reports “RA on the way down.” The CC continuously keeps the PAC apprised of the RA’s position.
  - c. The RA bends 90° at the waist, fully extends the legs, keeping the knees slightly bent, and contacts the vertical surface with his/her boots in supine (half-sitting) position.
16. Upon RA positive contact the CC reports: “Positive contact.” The RA is supported by the hoist cable and is not to be a “climber.” Hoist cable movement should be kept to a minimum at this point. The RA is now an extension of the helicopter. The CC shall verbally guide the PAC to maneuver the RA to the survivor.

#### **Note**

The “I am alright” hand signal is not required for DD procedures by the RA.

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17. Once secure footing has been established, the RA approaches the survivor via the prebriefed route by walking along the vertical surface:
  - a. The RA gives desired movement hand signals to the CC while moving about the surface.



The CC should keep slack to a minimum and be prepared to take the load immediately should the situation dictate.

### Note

- Failure to keep the RA directly below the rescue hoist may cause the RA to lose positive contact with the surface.
  - If the RA should lose positive contact with the vertical surface the CC shall report it to the PAC and begin recovery of the RA to a safe position to begin the delivery again.
- b. The CC gives positioning commands to the PAC to keep the helicopter in a stable hover directly above the RA and keep the RA in positive contact with the surface.

### Note

The RA may, upon reaching the survivor, request a small amount of slack in the hoist cable to allow the RA freedom of movement in order to prepare the survivor for pickup.

18. Upon RA contact with the survivor, the CC reports: “RA has engaged the survivor.”
19. The RA shall fit the survivor with the QS.



- If the survivor is placed in the QS device facing away from the RA, there is a possibility of the survivor being injured, and/or rendered unconscious due to the extreme pressure placed on the chest area. Placing survivor in the QS in this manner shall only be performed as a last resort in an extreme situation (i.e. Survivor losing grip on surface, debris falling, etc.) in which the RA may only get one chance to put the survivor in the QS, or the time required to place the survivor in the QS correctly would threaten the life of the RA and/or survivor.
- In the event the survivor grabs the RA preventing the application of the QS; the RA shall immediately grip the survivor under the arms and interlock his/her hands, as well as wrap the legs around the survivor if possible. The CC shall immediately recognize this situation as an emergency, and direct the aircraft away from the vertical surface down as low as safely possible and continue to hoist either into the aircraft or to the surface as appropriate.

**Note**

The RA shall attempt to ensure the survivor is facing him/her. If the survivor is either unable or unwilling to turn and face the RA, the RA shall not attempt to physically force the survivor to face them.

- a. Survivor Facing the Rescue Aircrewman:
  - (1) Using the hand of the arm that the quick stop is on, grasp the opposite wrist of the survivor (if the QS is on the right shoulder, the RA grasps the right left of the survivor and vice-versa).
  - (2) The RA slides the QS off of his/her arm and along the survivor's arm, placing the QS over the survivor's head and shoulders.
- b. Survivor Facing Away From the Rescue Aircrewman:

**Note**

The detachable lifting strap of the QS can be identified by the red band of webbing located next to the detachable lifting strap's V-Ring assembly.

- (1) Disconnect the QS detachable lifting strap V-Ring from the large rescue hook, pulling it out of the friction keeper.
  - (2) Wrap the QS around the survivor's chest.
  - (3) Route the QS detachable lifting strap V-Ring back through the friction keeper, and reconnect it into the large rescue hook.
- c. The RA then pulls the QS up into the armpits of the survivor, as high on the survivor's back as possible.
  - d. The RA slides the QS friction keeper as close as possible to the survivor, placing constant pressure on the friction keeper to hold it in place by simultaneously holding both lifting straps with one hand.



Failure to keep a tight hold of the QS lifting straps could allow the friction keeper to loosen. This may allow the survivor to slide out of the QS during hoisting or, if the safety strap is utilized, allow the majority of the survivor's weight to transfer from under the armpits to the survivor's groin area.

- e. With his/her free hand, the RA shall reach around and pull the safety strap out of the storage pocket located on the back of the QS.
  - f. Route the safety strap between the survivor's legs, and attach the safety strap snap lock to the friction keeper. **Do not cinch the safety strap down at this time.**
20. The RA performs a safety check:

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- a. The RA shall check the rescue hook, TSH lifting V-Ring, belay line, and QS lifting V-Rings for security:
  - (1) The RA shall ensure all lifting V-Rings are hooked into the large rescue hook.
- b. The RA shall ensure the QS detachable lifting strap is properly routed through the friction keeper.
- c. The RA shall ensure all safety straps are properly secured.
- d. Ensure the hoist cable is not fouled on equipment, rocks/debris, the survivor, or the RA.



In all cases (whether the survivor is determined to be combative, panicked, or cooperative) the RA shall not hoist the survivor from an overland or maritime environment without the proper application of the selected rescue device to include any and all safety straps or safety devices per this manual.

21. The RA signals “ready for pickup,” followed by the “Ready to lose positive contact” by hand signal (Chapter 6), or RA’s radio (secondary):
  - a. The RA shall immediately grasp the rescue hook with free hand to protect the RA’s face from whiplash of the hoist cable/rescue hook during hoisting.
  - b. After tension has come on the hoist, the RA shall release the rescue hook and reach down and adjust the QS safety strap just enough to take up the excess slack. Do not cinch the safety strap tightly against the crotch of the survivor.
22. The CC receives the “Ready for pickup”/“Ready to lose positive contact” hand signals from the RA and reports: “RA/survivor ready to lose positive contact.”
23. The CC shall direct the PAC to position the helicopter directly over the RA/survivor (putting the RA/survivor as vertical to the rescue hoist as possible to avoid excessive swinging once positive contact is broken), and then direct the PAC directly away from the vertical surface. Once the RA/survivor are safely away from the vertical surface, the CC reports: “RA/survivor clear of all obstacles.”

### Note

Upon hearing the “RA/survivor clear of all obstacles” from the CC, the PAC may elect to lower the helicopter (with verbal commands from the CC) to a predetermined height for safety during the hoisting evolution. This shall be done using standard voice procedures.

24. When satisfied with the helicopter positioning, the PAC commands: “Steady hover, commence hoisting.”
25. The CC acknowledges the command and continuously updates the PAC on the RA/survivor position (i.e., “RA/survivor halfway up,” “At the cabin door,” etc.).

**WARNING**

Do not detach the RA/survivor from the rescue hook until the RA/survivor are safely in the cabin of the helicopter. Securing the RA/survivor safely in the cabin shall be accomplished (once the RA and survivor are in the cabin) by the CC paying out just enough cable to close the cabin door to a point where it is resting lightly against the cable, disconnecting the RA and survivor, and securing them in the helicopter. Once the RA and survivor are secure, then CC opens the cabin door and stows the rescue hook. Ensure applicable T/M/S NATOPS airspeed restrictions are adhered to while the hoist cable is deployed from hoist assembly, and while the cabin door is not completely closed.

26. When the RA/survivor are at the cabin door, the CC shall position them so the survivor's back is to the CC, and the RA's feet (if possible) are in contact with the cabin deck. The RA will normally nod to the CC when ready to come into the helicopter.

**WARNING**

The CC shall not grab the survivor in any other manner than around the waist. Grabbing the survivor's clothes/gear or the QS may loosen the QS enough to allow the survivor to slip during transition into the helicopter cabin.

27. The CC shall grab the survivor around the waist, simultaneously letting out hoist cable and pulling the survivor (and RA) into the helicopter.
28. When the RA and survivor are completely inside the helicopter, the CC shall position him/herself in the cabin door, guarding against the RA and survivor falling out. The CC shall report: "RA/survivor aboard."
29. The CC shall pay out only enough hoist cable to allow the cabin door to be closed as far as possible without damaging the cable.
30. Once the cabin door is closed the CC shall disconnect the RA and survivor from the large rescue hook and secure them in the aircraft.
31. When the CC is satisfied the RA and survivor are secured properly, the CC shall then open the cabin door, seat the rescue hook, and close the cabin door (as required).
32. The CC then reports: "Rescue station secure, clear for forward flight."

**4.5 TREE EXTRICATION**

Tree extrication procedures may be required when a pilot is suspended in a tree while still connected to his/her parachute.

## **NTTP 3-50.1**

### **4.5.1 Qualification Requirements**

Qualification for tree extrication requires a crewmember meet the training proficiency and designation requirements of the OPNAVINST 3130.6 series.

### **4.5.2 Tree Extrication Equipment**

While some latitude exists, the following listed equipment is to be considered the minimum to perform tree extrication procedures:

- 2- Helmets
- 2- Line handling gloves (pr.)
- 1- Rappel harness
- 1- Climber's spikes (set)
- 1- Climber's belt
- 2- Pole straps
- 1- Belay line with bag (suitable length for evolution)
- 1 - Rappel rope with bag (250 feet) or (150 feet)  
(suitable length for evolution)
- 1 - Sky Genie descent control device
- 12- Locking carabiners
- 1 - "V"-Blade knife
- 1 - Roll of tubular nylon webbing (50 feet)
- 1 - Rescue "8"
- 1 - Litter
- 1 - Level "A" or "B" medical kit
- 1 - Single rope pulley (optional)

### **4.5.3 Preparation for Tree Extrication**

When possible, the helicopter should land as close to the survivor's location as possible and dispatch two RAs to the scene with the tree extrication equipment. If landing is not possible, the RA should be lowered by hoist or by rappelling methods.

The climbing RA shall don:

- Helmet

Line-handling gloves

Rappel harness

Climbing spikes

Climbing belt

2 - Pole straps

Belay line with bag

Rappel rope with bag

Sky Genie descent control device

10-Locking carabiners

“V”-Blade knife

2 - 6-foot pieces of nylon webbing

1 - 12-foot piece of nylon webbing



**WARNING**

The climbing RA shall wear a helmet and line-handling gloves throughout the evolution. The ground RA shall wear a helmet throughout the evolution and line-handling gloves while handling ropes.

**Note**

- The ends of the tubular nylon webbing shall be tied with a ring bend knot (Figure 4-39).
- It is advisable to tie the required “ring bend” knots in the two 6-foot and the 12-foot pieces of tubular nylon webbing prior to tree ascent.
- It is advisable to carry a couple extra carabiners and some extra flat rope. This will help to prevent unnecessary climbs in the event equipment inadvertently drops during the evolution.
- If applicable, the SV-2/LPA or CMU-24/P may be removed by both RAs during this evolution.
- The bitter end of the belay line shall be tied with a “Figure 8” knot before climbing the tree (Figure 4-40).

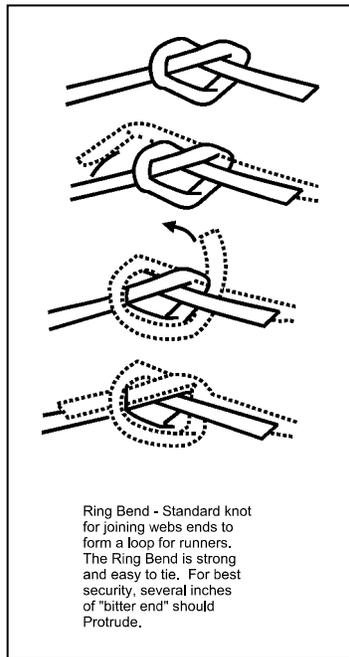


Figure 4-39. Tying a Ring Bend Knot into a Piece of Tubular Nylon Webbing

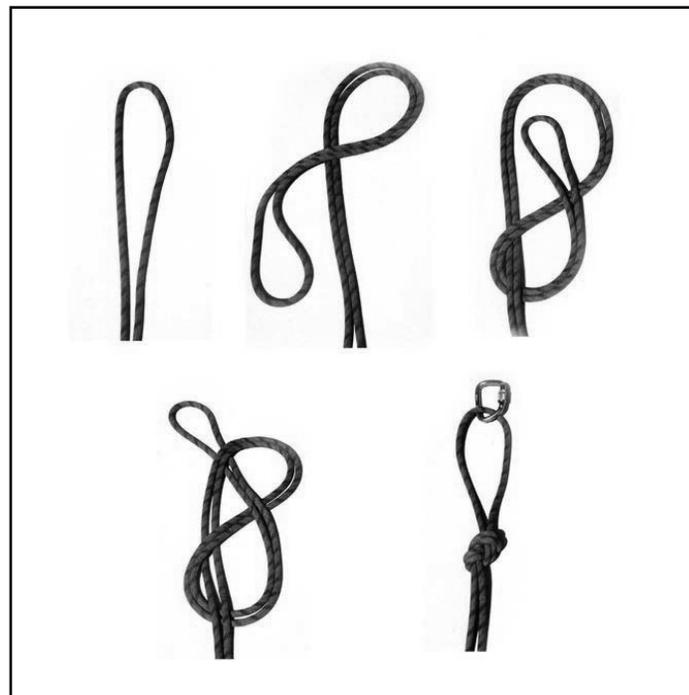


Figure 4-40. Tying a "Figure 8" Knot into the Belay Line and Attaching a Carabiner

#### 4.5.4 Procedures for Extrication From a Single Tree

Perform the following steps to lower a pilot suspended by his/her parachute canopy from a tree with sturdy branches above the survivor.



- Falling limbs may cause injury to the survivor and the RA. Use caution testing the strength of any limb.
- If the RA has to climb to a height where limbs will be encountered, the RA shall use two pole straps. The RA shall route one strap above the limb and attach it to the climber's belt before removing the strap below the limb.

#### Note

At the first opportunity, the RA shall remove the survivor's oxygen mask and place the cervical collar around the survivor's neck.

1. The RA, utilizing climbing belt and climbing spikes, shall climb to a limb immediately above the survivor. The limb must be capable of sustaining the weight of the RA and the survivor.



If necessary to climb out on a limb to position over survivor, the RA shall secure a pole strap around the limb.

2. The RA climbs out on the limb until within an arm's length of being directly above the survivor.



Ensure all carabiners are down and locked.

3. RA secures two separate attachment points to the tree limb utilizing two 6-foot pieces of tubular nylon webbing, looped over the limb and secured with locking carabiners (Figure 4-41).
4. As one RA climbs the tree, the other RA completes the following steps:
  - a. Ready the medical equipment.
  - b. Stage the litter.

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- c. Find a tree to serve as an anchoring point. This tree should be separate from the tree in which the survivor is suspended.
  - d. Secure a 12-foot piece of tubular nylon webbing to the base of the anchor/tree using a locking carabiner.
  - e. Once the RA in the tree drops the belay line to the ground, it is attached to the base of the anchor tree using the Rescue "8," or spring-loaded belay plate (Figures 4-42, 4-43).
5. Using the end of the rappel rope without the rope protector, the RA in the tree connects the swaged end of the rappel rope to the inboard carabiner. RA attaches the rope to the Sky Genie descent control device with a minimum of 2-1/2 wraps, the rappel rope shall always enter one side of the bail and exit from the opposite. The Sky Genie descent control device is then attached to the rappel harness with a locking carabiner, and a modified lock-off is performed. Lock-off procedures can be found in Paragraph 4.4.5.2.



When dropping or lowering equipment to the ground, use care to not strike survivor or ground RA. If the RA decides to keep spikes on throughout the evolution, the RA shall use care not to spike his/her legs or the survivor.

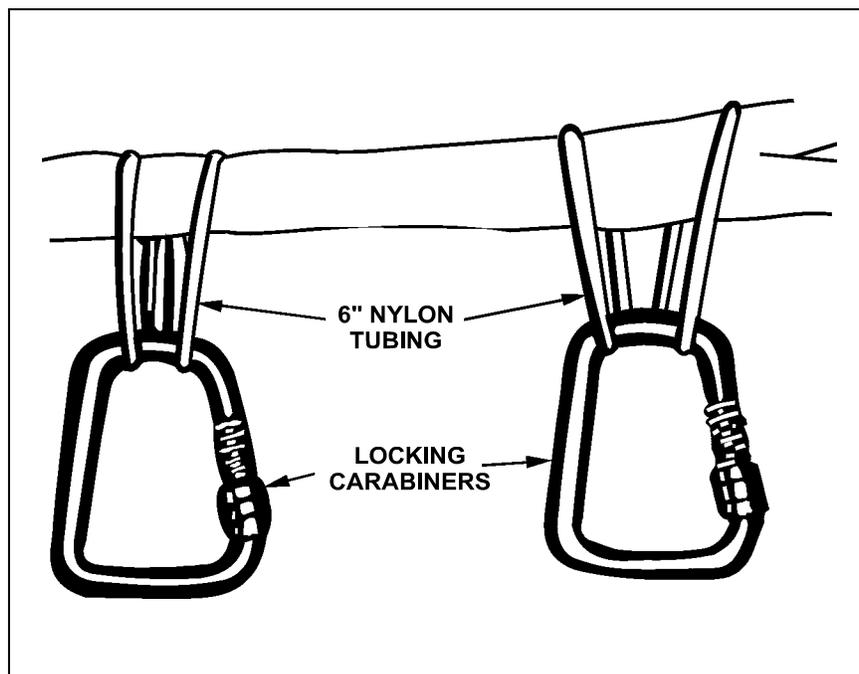


Figure 4-41. Securing Carabiners to a Limb Using Tubular Nylon Webbing

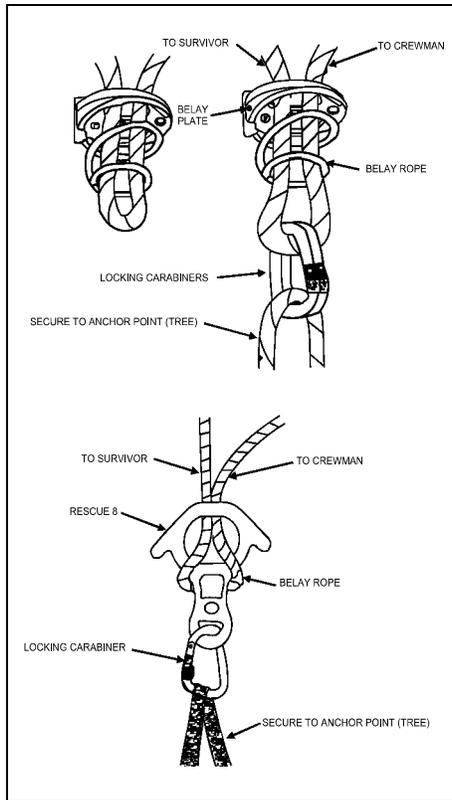


Figure 4-42. Threading the Belay Rope through the Rescue “8”/Spring-Loaded Belay Plate

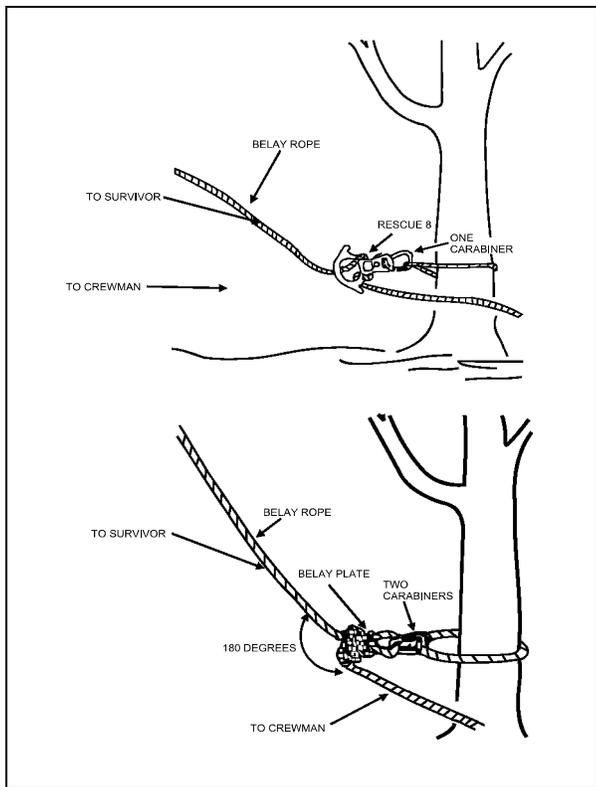


Figure 4-43. Anchoring the Rescue “8”/Spring-Loaded Belay Plate and Belay Line to the Tree

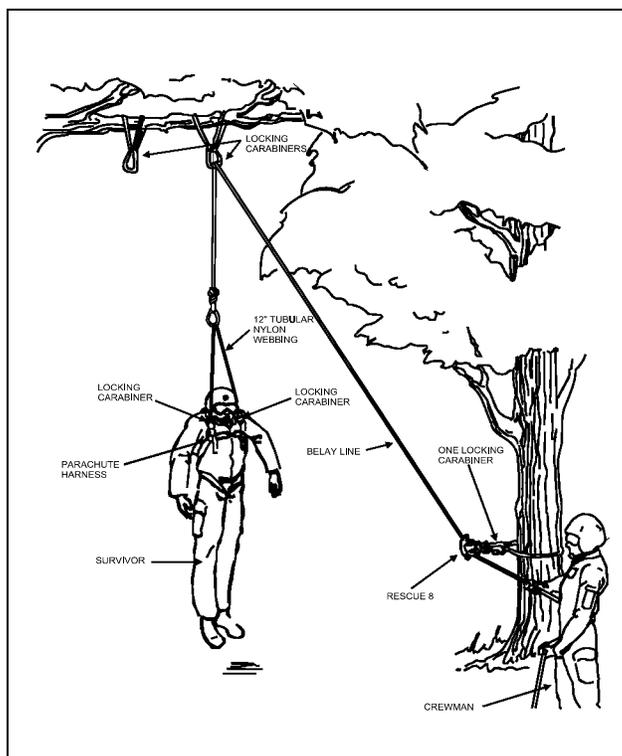


Figure 4-44. Rope Behind RA While Lowering a Survivor with a Possible Back Injury

**Note**

Use of the end of the rappel rope with the rope protector will make the limb unreachable once the RA releases hold of the tree limb, making lateral adjustment impossible.

6. The RA in the tree passes the end of the belay line through the outboard carabiner directly over the survivor and attaches a carabiner to the end of the line with the “Figure 8” knot (Figure 4-40). The belay line is temporarily attached to the RA in the tree. The other end of the line is then dropped to the RA on the ground.



Prior to releasing, ensure final safety check of rappel equipment is performed to include a modified lock-off.

7. At this point, the RA may drop the tree spikes and the rappel rope to the ground. The RA then disconnects the pole strap from the tree trunk or limb, unlocks the modified lock-off, and descends to a point where rappelling RA’s head is slightly above survivor’s head.
8. Upon reaching the survivor, perform a modified lock-off and complete recovery of the survivor as follows:

- a. A 12-foot piece of tubular nylon webbing tied in a loop with a Ring Bend knot (Figure 4-39) is used to secure the survivor to the belay line. The tubular nylon webbing is passed through the carabiner that is attached to the end of the belay line.



Ensure carabiners are attached to the harness and not to the riser straps, or the survivor may fall when the risers are released.

- b. Carabiners are placed on each end of the tubular nylon webbing and attached to webbing of the survivor's parachute harness at the shoulders, one on each side. This method causes minimum movement of the back while lowering the survivor until a litter can be placed in position (Figure 4-44).
9. Once the survivor is secured to the belay line, the RA on the ground removes slack from the belay line to relieve tension from the parachute risers.

#### **Note**

To help aid in braking the descent of the survivor, the ground RA shall wrap the belay line around the lower back and assume a well-balanced, braced position.

10. When the tension is relieved from the risers, the RA in the tree shall release the harness from the parachute or cut the riser straps as applicable.
11. As the RA on the ground slowly lowers the survivor, the RA in the tree shall rappel down with the survivor and guide him/her around any obstacles until they reach the ground. If spinal injury is suspected, the survivor is stopped above the ground and placed in the litter while still suspended (Figure 4-45).
12. The RA on the ground may tie off the belay line into a hands-free safety belay to assist the rappelling RA in effecting the rescue.

#### **4.5.5 Procedures for Extrication Via Tree to Tree Rigging**

Perform the following steps to lower a pilot suspended by his/her parachute canopy from a tree with no over hanging limbs from which to perform the normal tree extrication procedures.

#### **Note**

At the first opportunity, the RA shall remove the survivor's oxygen mask and place the cervical collar around the survivors' neck.

1. The RA determines the two best trees to use for the tree extrication procedure.

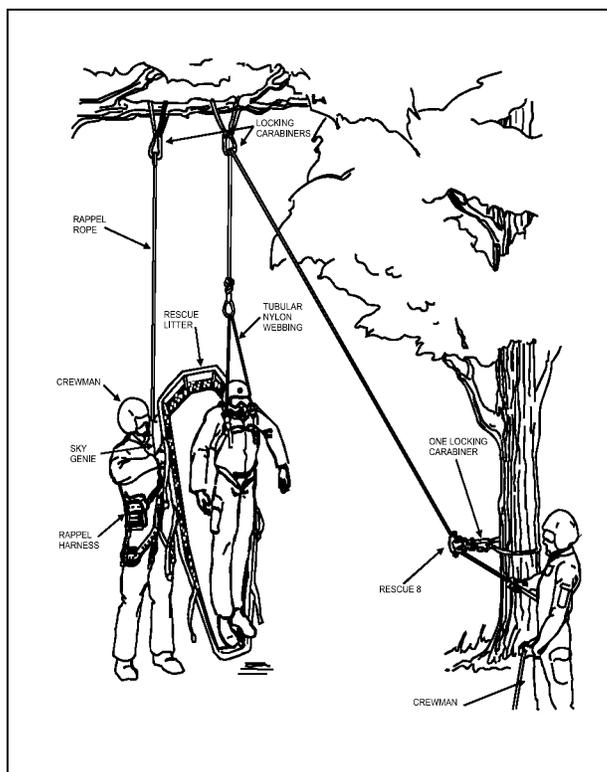


Figure 4-45. Position Rescue/MEDEVAC Litter under the Survivor



- The climbing RA shall wear a helmet and line-handling gloves throughout the evolution. The ground RA shall wear a helmet throughout the evolution and shall wear line-handling gloves while handling ropes.
- Falling limbs may cause injury to the survivor and the RAs. Use caution testing the strength of any limb.
- If the RA has to climb to a height where limbs will be encountered, the RA shall use two pole straps. The RA shall route one strap above the limb and attach it to the climber's belt before removing the strap below the limb.

**Note**

The rappel rope shall be used for the transverse line.

2. The RA climbs the more difficult tree first, as determined by obstructions and the shape of tree, with the swaged end of the rappel rope. The transverse line should be attached at least 12 to 15 feet above the survivor. This compensates for the stretching that will occur when the RA and survivor's weight is applied to the transverse line.



Ensure all carabiners are down and locked.

3. To attach the transverse line to the first tree, the RA wraps the swaged end of the rappel rope twice around the tree and secures it by attaching a locking carabiner through the swaged end of the rappel rope and back to the rappel rope. The RA then climbs or rappels down the first tree.

**Note**

- Ensure rappel rope protector does not interfere while securing rope to tree.
  - The bitter end of the belay line shall be tied with a “Figure 8” knot (Figure 4-40) before climbing the second tree.
4. The RA climbs the second tree with the opposite end of the transverse line to a height approximately the same as the anchor point on the first tree. The line is secured by wrapping it around the tree (Figure 4-46A) and connecting it back to itself using a locking carabiner (Figure 4-46B). The transverse line shall be wrapped around the tree and secured to the locking carabiner in this manner three times (Figure 4-46C). The transverse line should be taut to minimize sagging.



Cutting off a swaged end of a rappel rope will remove the safety feature should the rappelling RA inadvertently rappel to the end of the rope. Without a swaged end or a knot, the free end could slip through the rappelling RA’s hands and the Sky Genie, resulting in injury or death to the rappelling RA. Therefore, the cut end of the rappel rope shall be tied with a “Figure 8” knot.

5. The remaining line is then cut, leaving approximately 2 feet hanging freely. The free end shall be secured to the transverse line with two half hitches. The cut end of the remaining rappel rope is then tied in a “Figure 8” knot.
6. As one RA climbs the tree, the other RA completes the following steps:
  - a. Ready the medical equipment.
  - b. Stage the litter.
  - c. Find a tree to serve as an anchoring point. This tree should be separate from the tree in which the survivor is suspended.
  - d. Secure a 12-foot piece of tubular nylon webbing to the base of the anchor tree using a locking carabiner.

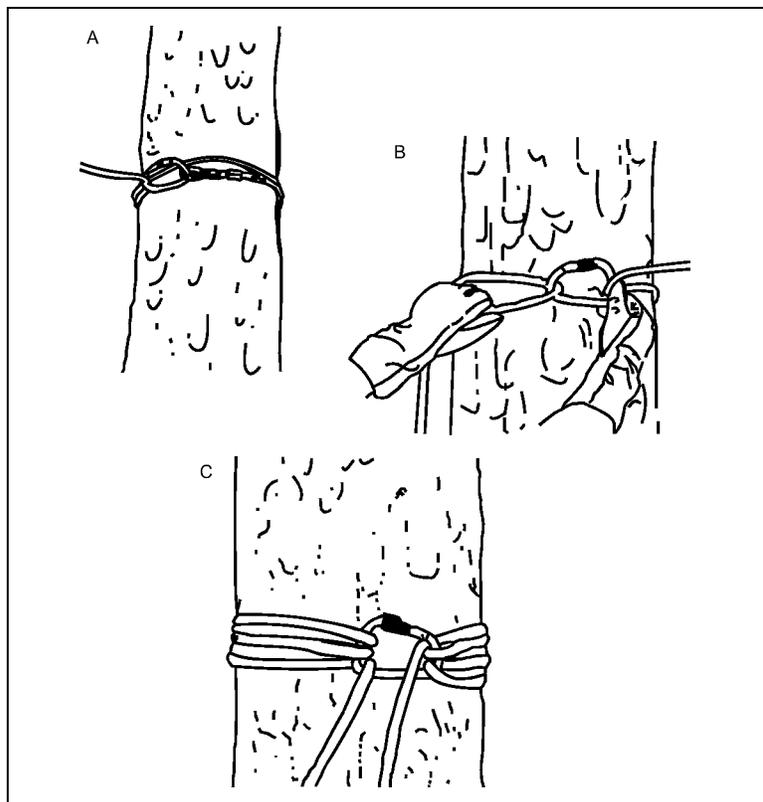


Figure 4-46. Attaching Transverse Lines to Trees

- e. Once the RA in the tree drops the belay line to the ground, it is attached to the base of the anchor tree using the Rescue “8,” or spring-loaded belay plate as depicted in Figure 4-42.
7. The RA in the tree attaches two carabiners daisy-chained, or one carabiner and a pulley, to the transverse line to support the belay line. The RA then connects one carabiner to the transverse line inboard of the belay line. Using the leftover swaged end of the rappel rope, the RA attaches the swaged end of the rappel rope to the inboard carabiner. RA attaches the rappel rope to the Sky Genie descent control device with a minimum of 2-1/2 wraps. The Sky Genie descent control device is then attached to the rappel harness with a locking carabiner and a modified lock-off is performed. Lock-off procedures can be found in Paragraph 4.4.5.2.

**Note**

Use of the end of the rappel rope with the rope protector will make the transverse line unreachable, once the RA releases hold of the tree, making lateral adjustment very difficult.

8. The RA in the tree passes the end of the belay line through the lower outboard carabiner or pulley and temporarily attaches it back to himself using a locking carabiner. The other end of the line is then dropped to the RA on the ground.



The RA may slide across the transverse line when released from the tree. Prior to releasing from the tree ensure a final check of rappel equipment is performed to include a modified lock-off.

9. The RA releases from the tree and hangs suspended from the rappel rope.



When dropping or lowering equipment to the ground, use care not to strike survivor or ground RA. If the RA decides to keep spikes on throughout the evolution, use care not to cause injury to the survivor.

**Note**

At this point, the RA in the tree may remove the climbing spikes and drop them to the ground.

10. The RA slides out by pulling hand over hand across the transverse line to a position directly above the survivor and rappels down to a position where the rappelling RA's head is slightly above the survivor's head.
11. Upon reaching the survivor, perform a modified lock-off and complete recovery of the survivor as follows:



Ensure carabiners are attached to the harness and not to the riser straps or the survivor may fall when the risers are released.

- a. If back injury is suspected, a 12-foot piece of tubular nylon webbing tied in a loop with a Ring Bend Knot (Figure 4-39) is used to secure the survivor to the belay line. The tubular nylon webbing is passed through the carabiner that is attached to the end of the belay line.

**Note**

Carabiners are placed on each end of the tubular nylon webbing and attached to the webbing of the survivor's parachute harness at the shoulders, one on each side (Figure 4-44). This method permits minimum movement of the back while lowering the survivor until a litter can be placed in position.

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12. Once the survivor is secured to the belay line, the RA on the ground removes slack from the belay line to relieve tension from the parachute risers.

### Note

To help aid in braking the descent of the survivor, the ground RA shall wrap the belay line around the lower back and assume a well-balanced, braced position (Figure 4-44).

13. When the tension is relieved from the risers, the RA in the tree shall release the harness from the parachute or cut the riser straps as needed.
14. As the RA on the ground slowly lowers the survivor, the RA in the tree shall rappel down with the survivor and guide him/her around any obstacles until they reach the ground. If spinal injury is suspected, the survivor is stopped above the ground and placed in the litter while still suspended (Figure 4-45).
15. The RA on the ground may assist the rappelling RA in effecting the rescue by tying off the belay line into a hands-free safety belay using the following procedures:
  - a. Grasp free end of the belay line approximately 10 inches from the belay plate/Rescue “8” and hold firmly (Figure 4-47A).
  - b. With free hand, route enough belay line through the locking carabiner(s) to tie an effective knot back to the belay line (Figure 4-47B).
  - c. Grasp the loop of belay line; route loop back over the top and back through the carabiner.
  - d. Tie a secure knot with the remainder of the loop back to the section of the belay line exiting the carabiner closest to the anchor tree (Figure 4-47C).



### WARNING

Prior to leaving the belay position the belay RA shall perform a final safety check to ensure the hands-free safety belay is secure.

### Note

Utilize same hands-free safety belay procedures for both Rescue “8” and spring-loaded belay plate.

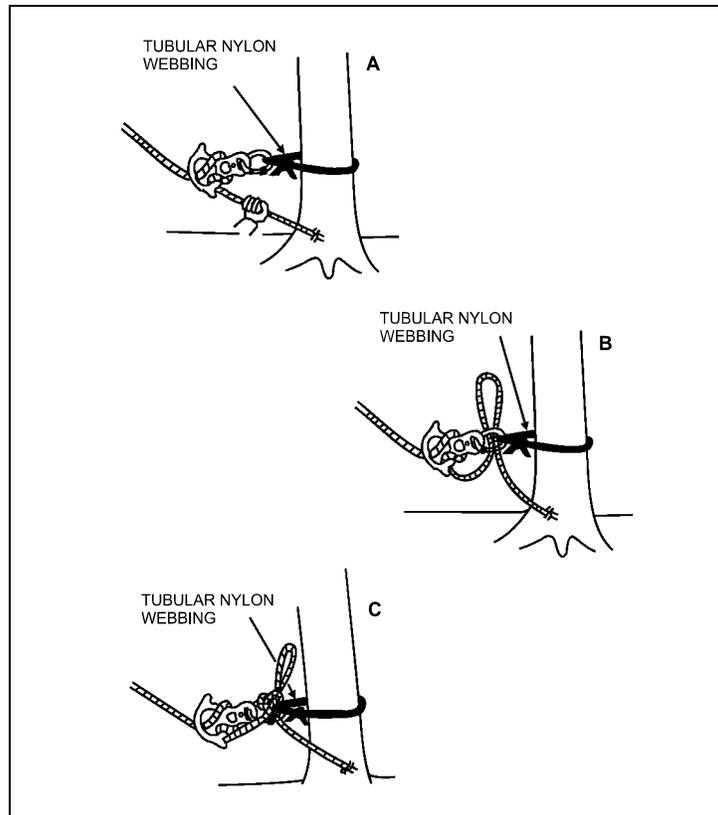


Figure 4-47. Hands-Free Safety Belay (Tree Extrication)

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# CHAPTER 5

## Search and Rescue Equipment

### 5.1 BASIC REQUIREMENTS

The nature of the SAR mission requires that naval units having SAR responsibilities be constantly equipped to carry out those responsibilities. This chapter establishes the approved minimum rescue equipment to be maintained by naval units with SAR responsibilities. Although the limiting factor in most situations will be shortage of space available, commands are encouraged to add authorized rescue equipment as necessary to increase mission readiness. Refer to Appendix D for procurement information.

#### Note

Required forecastle and rescue boat equipment outlined in Appendix D shall be stenciled with ship's hull number.

### 5.2 RESCUE SWIMMER EQUIPMENT

The 90-day inspection of the wet suit and other equipment should coincide with inspection of the RS's personal-issue life preserver, LPU-28/P or LPU-28/P Type II, and the RS's harness, or HBU-23/P.

Maintenance and inspection of all RS equipment shall be accomplished IAW NAVAIR 13-1-6. (series) manuals. Information on accessing and/or ordering these manuals via the Internet can be found on the SARMM website: <http://www.hsc3.navy.mil/sarmm/>.



#### WARNING

Use PPE when handling contaminated wet suits and/or equipment.

Wet suits and/or other equipment shall be removed from service if contaminated by any of the following: acetic acid, hydrochloric acid, muriatic acid, nitric acid, nitrobenzene, oxalic acid, phenol, or sulfuric acid.

#### 5.2.1 Minimum Rescue Swimmer Equipment

The minimum equipment that the RS shall have (Figures 5-1 and 5-2) is as follows:

#### Note

- Required forecastle and rescue boat equipment is outlined in Appendix D.
- The RS should keep at least one swim fin replacement strap (P/N 6215-02, NIIN 01-227-7507) with his/her personal RS equipment.

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- The RS shall not deploy into the water without the minimum items marked with an asterisk (\*).
- Surface Rescue Swimmer's minimum SAR equipment shall be stenciled with rescue swimmer's first and last initial, and last four numbers of SSN.

\*1. Rescue harness. The rescue harness shall be carried on all SAR missions and shall have the following attached:

- \*a. Strobe light SDU-5E/SDU-39 (with blue detachable lens)
- \*b. One pocket shroud cutter/"J" knife
- \*c. One swimmer's knife
- \*d. Four chemical lights — two high intensity, and two general purpose
- \*e. Two Mk-124 Mod 0 flares (aviation RSs ONLY)
- \*f. Whistle (surface RSs ONLY)



The RS shall never deploy into the water with the helicopter aircrew breathing device (HABD) removal of the HABD holster before water entry is at the RS's discretion.

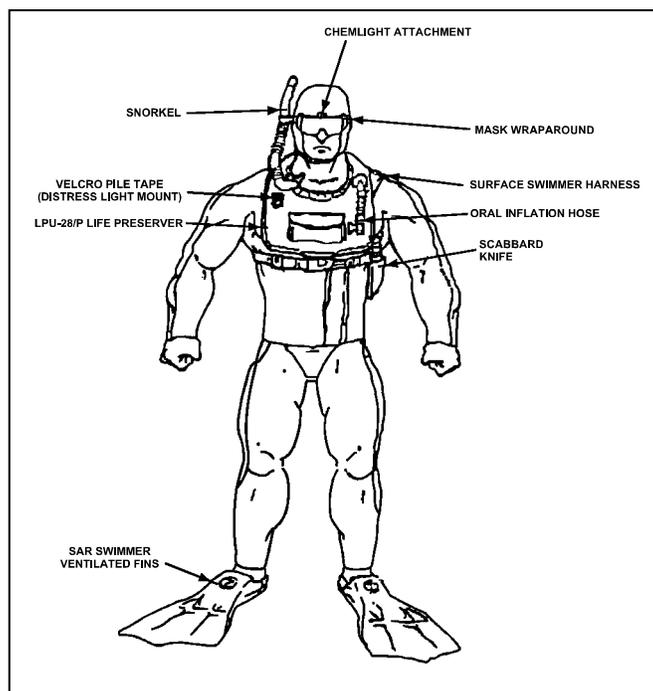


Figure 5-1. Surface Rescue Swimmer Dressed Out without Tending Line Attached

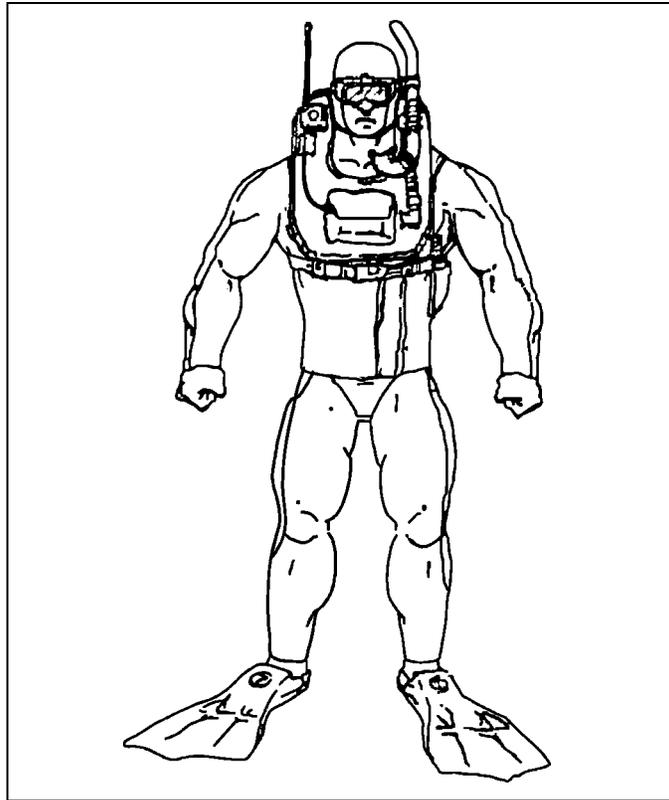


Figure 5-2. Aviation Rescue Swimmer Dressed Out

\*g. HABD holster (aviation RSs ONLY).

\*2. RS's flotation device.



The RS shall deploy into the water with a minimum of either a wet suit top, or dry suit assembly, as well as all other items listed marked with an asterisk (\*).

3. Wet suit ensemble

a. One-piece trouser

b. Long-sleeved jacket

\*c. One-piece shorty wetsuit

d. Hood

e. Gloves (preferably with reinforced palms)

\*f. Booties.

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4. Dry suit ensemble. Including appropriate undergarments.
- \*5. Ventilated swim fins.
- \*6. Wraparound swimmer's mask:
  - a. Chemical light attachment
  - b. Swimmer's snorkel.
7. UDT shorts (2 pair).
- \*8. AN/PRC-149 with C-12631/PRC-149 swimmers radio control unit (aviation RSs ONLY).
- \*9. Swimmer tending line when deploying by J-bar davit (surface RSs ONLY).

### **5.2.2 SAR Swimmer's Wet Suit Ensemble**

#### **Note**

- Required maintenance on all RS's gear shall be performed at organizational level and above.
- The RS shall perform a preflight/preuse inspection on all RS equipment prior to each use, and at intervals not to exceed 14 days. The RS shall also perform a post-flight/postuse inspection after each use. As a minimum requirement, the inspection shall consist of a visual inspection.
- A minimum of either a wet suit top or dry suit shall be worn on all overwater rescues. At the Commanding Officer's discretion the driFIRE shirt and UDTs may be substituted.
- Wet suit items can remain in service as long as the items continue to pass the required inspections outlined in the NAVAIR 13-1-6. (series) manuals.

The SAR Swimmer's wet suit ensemble is an exposure protective assembly designed for continuous wear. It will protect the RS from exposure to cold water, wind, and spray while performing emergency rescue actions at sea. The SAR Swimmer's wet suit ensemble consists of a one-piece trouser, long-sleeved jacket, one-piece shorty, hood, gloves, booties, mask, snorkel, swim fins, RS's life preserver, and community-specific (aviation or surface) RS's harness.

### **5.2.3 SAR Swimmer's Mask**

#### **Note**

- Before water entry, the RS's mask shall be tied off on either the left or right shoulder strap of the RS's harness and not passed through the neck hole of the RS's flotation device. The SAR swimmer's mask shall not be tied to the RS flotation device.
- Maintenance of the SAR swimmer's mask is limited to inspection, minor repair, and replacement IAW NAVAIR 13-1-6. (series).
- The SAR swimmer's mask shall have the chemical light attaching provision (P/N 168AS201-1547) incorporated prior to being placed in service.

The SAR swimmer's mask (P/N 1681AS200-1, CAGE 30003) is a wraparound mask for maximum field of view, and incorporates impact-resistant tempered glass. A mask strap replacement (P/N5084-02) and strap replacement clips (P/N 5026-07) are available for use with the mask.

#### 5.2.4 SAR Swimmer's Snorkel

##### Note

Maintenance on the SAR swimmer's snorkel is limited to visual inspection and replacement.

The SAR swimmer's snorkel (P/N 168AS400-2, CAGE 30003, NIIN 01-227-7503) is made of a flexible hose with mouthpiece attached to a solid upper tube. The SAR swimmer's snorkel is available in standard hose, Type 1, and flexible hose, Type 2. Replacement snorkel mask straps can be ordered under NIIN 01-228-0946.

#### 5.2.5 SAR Swimmer's Swim Fins

The SAR swimmer's swim fins are solid pliable fins designed for maximum power. They are made in three sizes: small (NIIN 01-227-6017), medium to large (NIIN 01-015-6762), and extra large (NIIN01-220-5816), or extra large SCUBAPRO jet fin (size 13 and up), (NIIN 01-077-5251). The RS should keep at least one replacement strap (P/N 6215-02, NIIN 01-227-7507) with his/her personal RS equipment.

#### 5.2.6 LPU-28/P AND LSC (P/N 482) Life Preserver Assemblies

##### Note

- The Lifesaving Systems Corporation (LSC P/N 482) life preserver is a modified LPU-28/P life preserver. The modification consists of a two-piece hook-and-pile tape retention strap for ease of routing the wire of the SCU. Both the LPU-28P and LSC (P/N 482) assemblies are authorized for use by all aviation and surface RSs during SAR operations. They are designed to be compatible with helicopter aircrew helmets. They provide storage and pile tape attachment points for the SDU-39N distress light and AN/PRC-125/149 radios with the SCU installed.
- Both the LPU-28/P and LSC (P/N 428) life preserver assemblies (Figure 5-3) weigh a maximum of 2.5 pounds (without accessories) and provide a minimum of 30 pounds of buoyancy. Both assemblies consist of a single compartment flotation assembly, a casing assembly, a waist belt, and a carbon dioxide inflation assembly. The LPU-28/P incorporates a diver's mouthpiece type oral inflation valve, and a pressure relief valve. The LSC P/N 482 has a standard oral inflation tube with a knurled ring locking mechanism, and does not incorporate a pressure relief valve.
- The flotation assembly is constructed of heat-sealed polyurethane film. It is contained by the cover assembly and attached to the oral inflation assembly, pressure relief valve, and CO2 inflator by threaded access fittings and a valve stem, which pass through the cover assembly. The casing assembly has an adjustable waist belt and optional back strap attached. The carbon dioxide inflator consists of a carbon dioxide cartridge (28-31 grams, type II) and an inflation valve (3063). The carbon dioxide inflator is mounted on the valve stem, which passes through the casing assembly and seals to the flotation assembly. A check valve is installed in the valve stem to prevent leakage. The cord connecting the actuating knob and carbon dioxide inflator passes through a channel on the casing assembly to provide an all-directional pull.

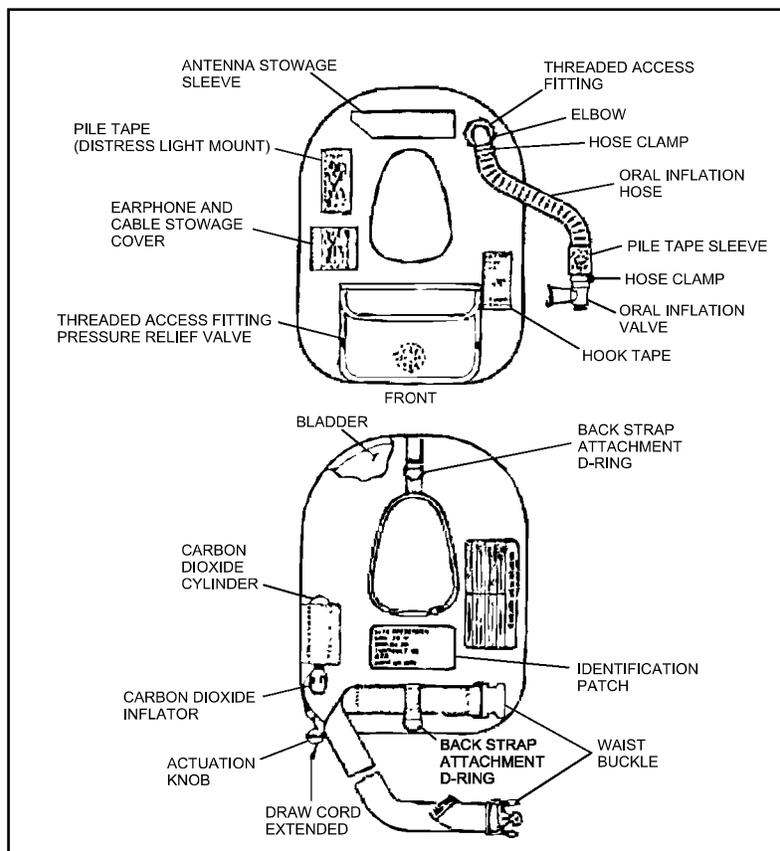


Figure 5-3. LPU-28/P and LSC (P/N 482) Life Preserver Assemblies

### 5.2.7 Aviation RS's Harness (HBU-23/P) P/N 205



- The lifting “V” Ring of the RS harness shall always be hooked into the large hook of the DRH, without exception. Under no circumstances is it permissible to use the small hook of the rescue hook to hoist personnel.
- The RS harness (see Figure 5-4 for aviation RS harness) shall be worn by the RS on all rescues, and has the capability of carrying multiple RS devices. Refer to Appendix D for a list of required equipment for the RS harness. The harness is constructed of MIL-W-4088 Type 13 webbing consisting of shoulder straps, risers, back straps, an adjustable chest strap, and a lifting strap. The end of the lifting strap is equipped with a snap-link assembly and a parachute harness triangle link. A pouch on the front of the harness provides a stowage place for the lifting strap and its attached hardware. A webbing pull handle attached to the front of the stowage pouch permits ready access to the lifting strap snap link during rescue operations. Pocket assemblies are located at the junction of each riser and the lifting strap and on the right shoulder strap.

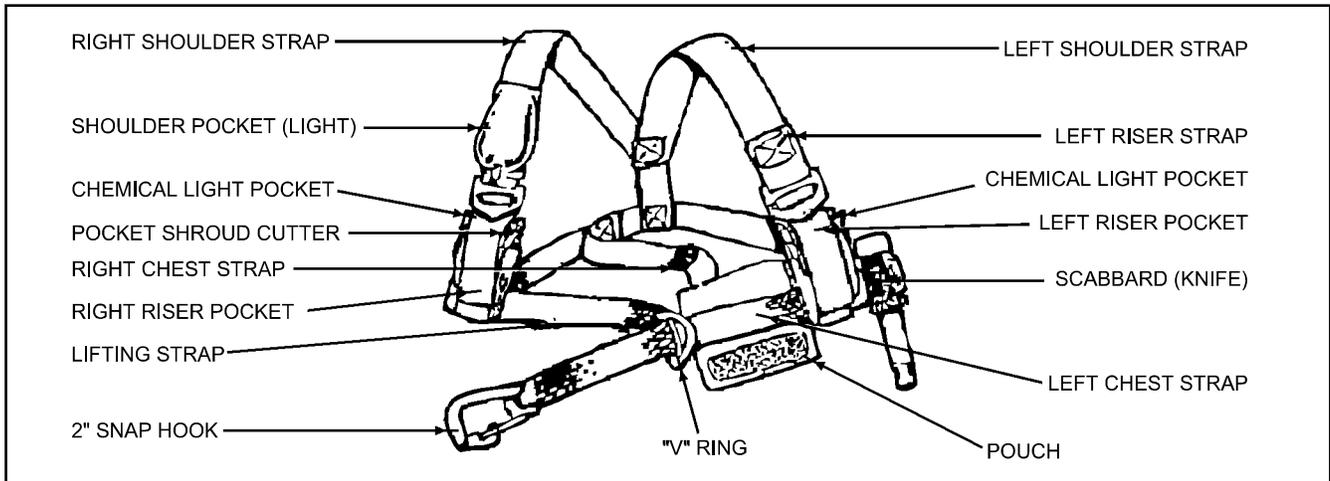


Figure 5-4. Aviation Rescue Swimmer Harness



The right pocket assembly consists of a three-pocket unit, which provides stowage for an MK-124 smoke and illumination flare, hook blade knife, and 4-inch chemical light. A MK-124 flare and 6-inch chemical lights are stowed in a two-pocket unit on the left side. A strobe light is stowed in the single pocket attached to the right shoulder strap. A knife scabbard is attached to the left side of the lifting strap. The black color of the webbing from which the harness is made provides increased ultra-violet resistance.

**Note**

- Maintenance of the RS’s harness shall be limited to inspection, cleaning, and minor repairs of broken stitching.
- Inspection of the RS’s harness consists of preflight and special. Inspections performed at the organizational level or above.
- Special inspections shall be performed by organizational level or above upon issue, prior to placing the harness in service, and at regular intervals as prescribed by the applicable NAVAIR 13-1-6. (series) manual. The special inspection shall consist of a service life check, visual inspection, and a contamination inspection.

**5.2.8 Surface Rescue Swimmer Harness**

The surface RS harness (Figure 5-5) is designed specifically for U.S. Navy surface RSs. The main harness is constructed of Type 13 MIL-SPEC webbing. All harness hardware is made of type-304 stainless steel for strength and high corrosion resistance. All structural stitching is accomplished with #207 (three-cord) nylon thread. The black webbing provides increased ultraviolet resistance. Attached pockets provide stowage for strobe light and signaling devices.

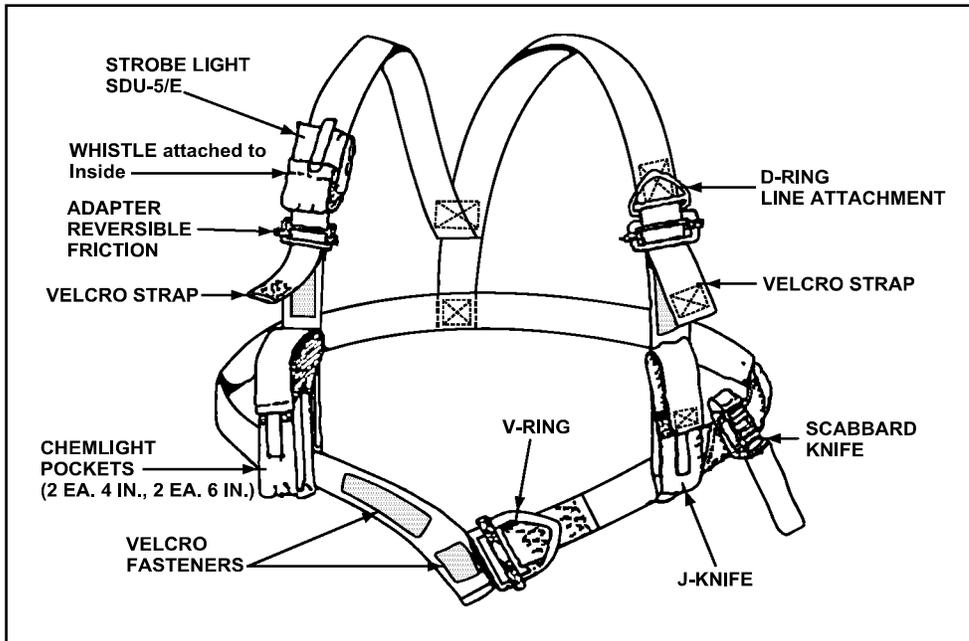


Figure 5-5. Surface Rescue Swimmer Harness

**5.2.9 SAR Swimmer’s Knife and Sheath, P/N 1681AS500-1**

The RS’s knife and sheath (P/N 1681AS500-1, CAGE 30003, NIIN 01-278-3007) is made of a stainless steel blade with a small amount of carbon added to ensure a sharp edge, and a hand grip, which is molded around the shank of the blade. The belt sheath is molded rubber with an attached end to hold the knife in the sheath. The current knife is being replaced through attrition by a new knife (same P/N) with a blunt tip and a notch to cut shroud lines.

**5.2.9.1 N-SAR (BTS) SAR Knife**

The Emerson SAR knife is an authorized replacement for the current diver’s knife with scabbard and hook blade knife. Refer to NAVAIR 13-1-6.5 for installation/inspection requirements. (See Figure 5-6.)

**5.2.10 Rescue Swimmer Trunks**

Rescue swimmer trunks (UDT shorts) are available in seven sizes, 28–40, and are available through normal supply channels. The part number is: 81439-MIL-T-29112. Individual stock numbers (by size) can be found in the NA 00-35QH-2, Item A.174.



Figure 5-6. Emerson N-SAR (BTS) Knife

### 5.2.11 Rescue Swimmer's Gloves

Rescue swimmer's gloves are also available through the Navy Supply System and are available in sizes x-small through x-large. Individual stock numbers can be found at item A.146 in the NA 00-35QH-2, part number 30003-3462AS106-1 thru 5, depending on size.

### 5.2.12 AN/PRC-149 Radio Set and C-12631/PRC-149 Radio Control Unit

The AN/PRC-149 radio set is a personal noncombat emergency communication radio and emergency location beacon transmitter. The radio set operates in voice transceiver mode on three manually selectable emergency frequencies. A triple-frequency beacon-operating mode provides transmissions on all three internationally recognized search and rescue frequencies. The C-12631/PRC-149 radio control unit (voice box with cable) connects to the AN/PRC-149 to make it a SAR swimmer's radio. When attached, the control unit assumes control of the push-to-talk (PTT) and the Up and Down volume-control functions. Connecting the SAR swimmer's radio control unit disables the corresponding functions in the AN/PRC-149. The AN/PRC-149 is battery-powered and contains a flexible VHF/UHF antenna, GPS antenna, LED display, On/Off Switch, volume-control switch, PTT switch, microphone, speaker, and earphones.

The AN/PRC-149 is intended to provide a means of signal and voice communication between a downed aircrew member and the rescue party in the event of an emergency. The C-12631/PRC-149 radio control unit provides a means of signal and voice communications between the SAR swimmer and the SAR aircraft.

Maintenance of the AN/PRC-149 and C-12631/PRC-149 radio control unit consists of place-in-service, pre-flight, postflight and special inspections. Maintenance shall be performed at the organizational level or above. For all maintenance procedures, refer to NAVAIR 16-30PRC149-1.

### 5.2.13 Rescue Swimmer Extreme Environmental Gear

The following is a list of the latest SAR gear developed to protect RSs from hypo/hyperthermia related injuries. Dry suits will not protect the RS from cold-related injuries if the proper undergarments, head, hand, and foot protection are not utilized.

#### Note

- Perform a place-in-service inspection on all extreme environment gear IAW NAVAIR 13-1-6.7-2 Aircrew Personal Protective Equipment (Clothing) Manual, at initial issue, and when removed from storage.
- It is the RS's responsibility to perform a pre/postflight/use inspection on all extreme environment gear.
- Surface RS only: Until NAVSEA PMS guidelines are formally implemented, the storage, handling, folding and packing, leak inspection, visual and periodic inspection guidelines outlined in the user care and maintenance manual provided with the dry suit shall be adhered to. The user care and maintenance manual, along with the repair kit, shall be maintained with the dry suit.

### 5.2.13.1 Dry Suit Assemblies



- When the water temperature is below 60 °F, a dry suit ensemble is required. When water temperatures are 60 °F to 70 °F, a dry suit ensemble is worn at the CO's discretion. When the water temperature is above 70 °F, a dry suit ensemble is not required.
- Refer to Figure 5-7 for guidance on protective undergarments required with respect to water temperature.
- Use appropriate undergarments (see below) such as wool, or man-made fibers such as Gore-Tex when utilizing dry suits. The use of cotton undergarments (including socks) shall be avoided.

#### Note

All dry suit assemblies shall remain in service until it is beyond economical authorized repair.

1. Rescue swimmer's dry suit. The Mustang Model MSD565 Gore-Tex aviation rescue swimmer's dry suit (ARSD) is a commercial off-the-shelf (COTS) open-purchase garment used as an outer garment. The MSD 565 comes in four sizes (small, medium, large, and x-large).

The MSD 565 has the following characteristics:

- a. Lightweight and flexible nylon Gore-Tex laminate
- b. Latex neck and wrist seal which stretches to fit
- c. Internal suspenders that adjust to accommodate a range of sizes
- d. One-size-fits-all factory-installed antiexposure socks
- e. Exhaust valve to expel trapped air
- f. Reflective tape from the shoulder to upper-arm
- g. Protective pads built into the knee, chest, and underside of forearm.

#### Note

The MSD 565 is currently the only authorized dry suit for purchase, and is currently replacing the MSD 560 by attrition.

Procurement of the MSD 565 can be done either through the supply system, or directly from the manufacturer, Mustang Survival Manufacturing, Inc.

Water Temperature	Required Minimum Protective Equipment and Undergarments for use with the Dry Suit Assembly (Note 1)
70 to 60°F	CWU-44/P undershirt, CWU-43/P drawers or Exotherm I or II fleece jumpsuit
60 to 55°F	CWU-44/P undershirt, CWU-43/P drawers, CWU-72/P liner (Note 2) or Exotherm I or II fleece jumpsuit, gloves, and hood
55°F and Below	CWU-44/P undershirt (2 layers), CWU-43/P drawers (2 layers), CWU-72/P liner (Note 2) or CWU-44/P undershirt, CWU-43/P drawers, Exotherm III fleece jumpsuit, gloves, hood, and wool socks
<p><b>Note 1:</b></p> <p><b>Note 2:</b></p> <p><b>Note 3:</b></p>	<p>The minimum protective equipment and undergarments for use with the dry suit may be added to by the RS/command, but never subtracted from. The RS is reminded that too much protective gear may cause a heat-related incident, so care should be taken when adding extra layers, etc.</p> <p>For women: The CWU-81/P and CWU-82/P liner (two-piece system) may be substituted for the CWU-72/P liner.</p> <p>Components of the Multi-Climate Protection System (MCPS) may be substituted for CWU-43/P, CWU-44/P, CWU-72/P, CWU-81/P, CWU-82/P, and Exotherm liners in accordance with NAVAIR 13-1-6.7-2 table 3-15.</p>

Figure 5-7. Required Equipment Vs. Water Temperature

Mustang Survival USA  
 3870 Mustang Way  
 Bellingham, WA 98226

Phone (comm.): 360-676-1782  
 Fax: 360-676-5014  
 E-Mail: [mustangusa@mustangsurvival.com](mailto:mustangusa@mustangsurvival.com)

**5.2.13.2 Dry Suit Donning**



Dry suits provide no inherent buoyancy.



Once donned, the aviation RS shall always “burp” the dry suit. This procedure shall be repeated again just prior to deployment. Failure to “burp” the dry suit prior to deploying by 10/10 or 15/0 will most likely cause the dry suit to tear upon contact/immersion in the water. “Burping” is accomplished by squatting at the knees, fully bent forward at the waist, while holding the neck seal open, driving as much of the air out of the dry suit as possible.



**WARNING**

Dry suits themselves do not provide adequate hypothermia protection. Use of head, hand and foot protection in addition to appropriate insulating liners/undergarments outlined in Figure 5-7 shall be worn beneath the dry suit to provide hypothermia protection.



**CAUTION**

- Use extreme care when donning the dry suit. Prior to donning the dry suit, remove items such as rings, watches, etc. A torn dry suit will leak, severely degrading its immersion protection. Avoid putting fingernail pressure on the wrist and neck seals to prevent cutting the seals.
- New neck and wrist seals may need to be trimmed to allow a proper seal without restricting circulation. Only qualified maintainers following the manufacturers maintenance instructions may trim neck and wrist seals.

**Note**

- RSs with prominent wrist tendons on the surface of the skin will form a groove along the wrist when the hand is tensed and may allow water to leak in the seal. If you have prominent wrist tendons, pull the wrist seals up the arm above the tendons to prevent wrist-seal leakage.
  - The use of paraffin wax or beeswax on the entry zipper teeth will act as both a lubricant and a corrosion preventative.
1. Remove shoes/boots. Don the MSD-560/565 Series coverall by first inserting feet into antiexposure socks, then pull coverall up past waist. If suspenders are incorporated, don them and adjust to personal comfort.
  2. Insert arms into sleeves. Grasp upper part of coverall (behind head) and pull neck seal over head. Adjust neck seal so it is comfortable and seam tapes are aligned with shoulders. Release thumb loops from hook-and-pile fastener tapes on sleeves.
  3. Place right loop over right thumb and extend right arm horizontally to side of body. Grasp entrance opening slide fastener with left hand and close fastener to a point past center of chest.
  4. Remove right thumb from loop. Place left thumb in left sleeve loop and extend arm horizontally to side of body. Grasp slide fastener pull-tab in right hand and completely close entrance slide fastener. Ensure pull-tab is firmly seated into seal block and butted against end block.
  5. Remove thumb from thumb loop and mate fastener tapes of both loops with fastener tapes on sleeves.

6. Ensure relief portal slide fastener is closed. Ensure pull-tab is firmly seated into seal block and butted against end block.
7. Manually vent (burp) air from the suit by squatting at the knees and bending forward while pulling the neck seal away from the neck.

### 5.2.13.3 Dry Suit Doffing



- Ensure the entry zipper is completely opened prior to removal of the dry suit. If not entirely opened, damage could result to the entry seal.
  - Avoid putting fingernail pressure on the wrist and neck seals to prevent cutting the seal.
1. Remove all personal rescue equipment. If the outside of the dry suit was exposed to salt spray, dirt, or foreign material during the mission, wash the suit down prior to removing it, paying particular attention to the entry zipper.
  2. Release thumb loops on each sleeve from hook-and-pile fasteners. Insert left thumb in left loop and extend left arm horizontally to side.
  3. Grasp entrance slide fastener pull-tab in right hand and open slide fastener past center of chest.
  4. Remove left thumb from loop. Insert right thumb in right loop and extend right arm horizontally to side.
  5. Grasp entrance slide fastener pull-tab in left hand and completely open slide fastener. Remove right thumb from loop.
  6. Grasp upper portion of coverall and pull up over head.
  7. Remove dry suit from legs and feet.

### 5.2.13.4 Dry Suit Cleaning



- Ensure that slide fasteners are closed prior to laundering/cleaning. Do not dry-clean dry suit coveralls. Do not use bleaches or similar additives for cleaning. Do not use commercial laundry facilities.
  - The dry suit needs to be thoroughly cleaned and dried prior to storing. Failure to adequately clean the suit after use may result in failure of the zipper or seals.
1. Pull sleeves inside out while pulling arms from sleeves. Peel coverall down, turning it inside out down below the waist. Remove legs and feet from coverall. Close slide fastener.

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2. Hand-laundry, or use an automatic washer that has a delicate cycle. Ensure water used is cold.
3. Follow detergent manufacturer's recommendations for amount of detergent to use. Wash cycle shall not exceed 3 minutes.
4. Rinse garment three times. Use clean, fresh water for each rinse. Each rinse cycle shall be a minimum of 1 minute.
5. Coveralls may be dried using a clothes dryer, using lowest heat setting, for 20 minutes.
6. Recommend garment be placed in a locally fabricated mesh bag to minimize potential abrasive wear.
7. Hang coverall by shoulders on a wooden or plastic hanger in a well-ventilated area until dry, or tumble dry with low heat.
8. When outside is dry turn legs and socks inside out to dry.

### 5.2.13.5 Dry Suit Undergarments

#### Note

Maintenance is limited to a place-in-service special inspection. If any defects are found, return the undergarment to the manufacturer. The user maintains the responsibility for maintenance of the undergarment, which is limited to pre/postflight inspection and cleaning of the garment. Clean the undergarment IAW the manufacturer's instructions.

#### Note

- The undergarment shall remain in service until it is damaged. There are no authorized repairs to dry suit undergarments.
- Refer to Figure 5-7 for guidance on protective undergarments required with respect to water temperature.

U.S.I.A. military exotherm fleece jumpsuit (SAR swimmers only) — U.S.I.A. military exotherm fleece jumpsuit is a COTS undergarment that can be utilized with the CWU-43/P drawers and the CWU-44/P undershirt, or by itself underneath the SAR swimmer's dry suit, Mustang Model MSD 560/565 Gore-Tex, coverall.

#### Note

The Exotherm I and II are the same thickness, and rated at the same temperatures. The Exotherm II includes wind protection.

The Exotherm III is the recommended jumpsuit for activities only purchasing one model of jumpsuit per RS.

The Exotherm jumpsuit is available in three (3) models:

Exotherm I and II: Air Temp. 90 – 50 °F/Water Temp. 75 – 55 °F

Exotherm III: Air Temp. 65 – 35 °F/Water Temp. 55 – 40 °F

Size	CWU-43P Waist Measurement	CWU-43/P NSN	CWU-44/P Chest Measurement	CWU-44/P NSN
<b>SMALL</b>	<b>26 to 29</b>	<b>00-467-4075</b>	<b>34 to 37</b>	<b>00-485-6547</b>
<b>MEDIUM</b>	<b>30 to 33</b>	<b>00-467-4076</b>	<b>38 to 41</b>	<b>00-485-6548</b>
<b>LARGE</b>	<b>34 to 37</b>	<b>00-467-4078</b>	<b>42 to 45</b>	<b>00-485-6680</b>
<b>X-LARGE</b>	<b>38 to 41</b>	<b>00-467-4100</b>	<b>46 to 49</b>	<b>00-485-6681</b>

Figure 5-8. CWU-43/P and CWU-44/P Sizing Chart

CWU-43/P and CWU-44/P cold weather underwear — The drawers are full length and the ankles are of tight-knit weave to fit securely. They have a boxer-style fly closure and an elastic waistband. The undershirt has full sleeves and the cuffs and neckband are of a tight-knit weave to fit securely. The drawers and undershirt shall be personal-issue items, and each RS shall maintain two of each item. To determine drawer and undershirt sizing and NSN use the guidelines in Figure 5-8. The CWU-43/P and CWU-44/P cold-weather underwear (MIL-D-85040) is designed to provide added thermal insulation and is constructed from (aramid) high temperature-resistant material. The cold-weather underwear is designated for use by all aircrew members operating in cold temperatures. The underwear may be used with standard Navy cold-weather equipment.

The cold-weather undershirt and drawers are individually fitted to the aircrew member. The proper size cold weather underwear corresponds to the regular underwear size.

The CWU-81/P and CWU-82/P liners are intended for women’s use only. The CWU-81/P liner is a shirt, and the CWU-82/P are drawers. The liners shall be worn directly under the MSD560-Series coveralls and over the recommended underclothing. The liners are supplied in nine sizes.

**5.2.13.6 Rescue Swimmer driFIRE Shirts**

The desert sand driFIRE silk weight long sleeve shirt is fire resistant and incorporates fast wicking and fast-drying properties designed to keep the user cool and dry. The driFIRE shirts can be utilized by Rescue Swimmers in extreme air and water temperature conditions where the possibility of heat related injuries exist. Use of the driFire garment is at the Commanding Officer's discretion. The long sleeve shirts will be worn with the UDT swim shorts and the Rescue Swimmer harness in lieu of the shorty wetsuit. The shirts are open purchased through driFIRE utilizing the size chart below. (See Figure 5-9.)

**5.2.14 Direct Deployment System (Aviation RS Only)**



- The Direct Deployment System (DDS) shall only be used by qualified rescue crewmen.
- The DDS consists of two components: a TRI-SAR harness assembly P/N 487 and a quick strop P/N 214. The TRI-SAR harness assembly has two integrating components, a harness, P/N 487H, and a removable flotation vest, P/N 487VB.

Basic Chest Measurement Chart (in inches)								
Size	XXS	XS	S	M	L	XL	XXL	XXXL
	31	34	37	40	43	46	49	52

Figure 5-9. Basic Chest Measurement

### 5.2.14.1 TRI-SAR Harness

#### Note

The TRI-SAR harness (Figure 5-10) is designed to replace the aviation rescue swimmer's harness (HBU-23/P) P/N 205 and is authorized for use by ALL aviation rescue swimmers, not just RSs qualified in DD procedures.

The TRI-SAR harness assembly is designed to combine the security of a full-body harness with the comfort of a seat harness. The harness is black in color and comes in five sizes: small, medium, large, extra-large, and extra-extra large. When being hoisted, the harness provides a slightly reclined seated position, allowing total use of the rescuer's hands. The integrated flotation vest is black and features a low-profile, easy-to-swim-in design with a minimum buoyancy of 35 lbs. The vest includes three pockets for stowage of survival items. The flotation bladder is encased entirely in a heavyweight, puncture/abrasion-resistant nylon cover. The flotation vest can be removed easily when flotation is not required.

### 5.2.14.2 Quick Strop



- The quick strop (Figure 5-11) is authorized for use only in conjunction with the TRI-SAR Harness. It shall not be used with any other RS harness.
- The quick strop shall only be used by RSs qualified in DD procedures.

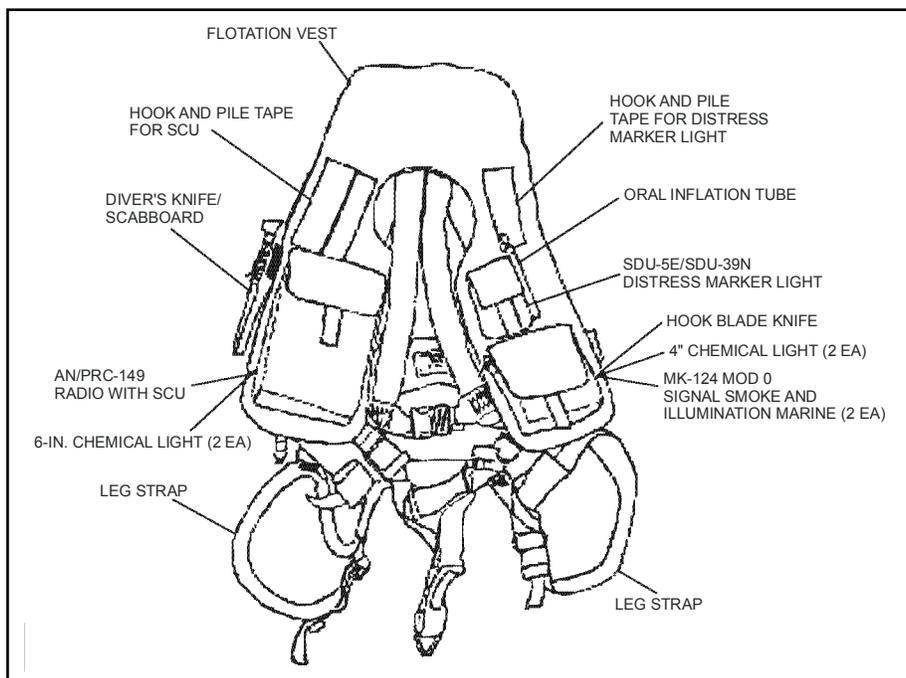


Figure 5-10. TRI-SAR Harness with Flotation Assembly (P/N: 487VB) Installed

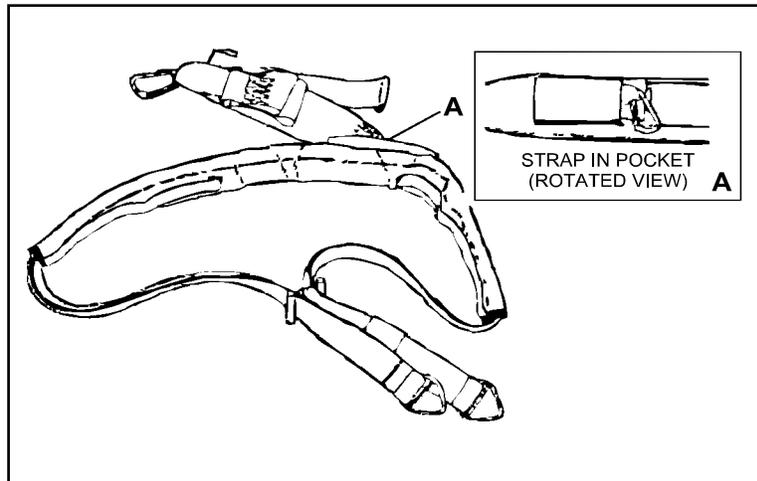


Figure 5-11. Quick Strop with Safety Strap Unpacked

The quick strop is used only in conjunction with the TRI-SAR harness assembly and provides for a quick and safe means of hoisting uninjured personnel. It has stainless steel hardware, a slide buckle that slides down the strop to prevent the survivor from slipping out, and an adjustable retainer strap that is stored in a zippered pocket on the rear of the strop.

#### 5.2.14.3 Inspection and Care

The DDS shall be inspected and maintained IAW NAVAIR 13-1-6.5. Preflight/Postflight inspections shall be performed by the user.

### 5.3 RESCUE DEVICES

The following rescue devices are common for both aviation and shipboard rescue missions. Selection of the rescue device will generally have been made prior to RS deployment. The assigned rescue crew must be knowledgeable in the application and operation of all rescue devices. NAVAIR 13-1-6. (series) manuals address the application and inspection of these devices. Selection is determined by the physical condition of the survivors, and whether the situation is a single- or multiple-survivor rescue scenario. Chapters 1, 2, and 3 of this manual detail the use of the various devices by the rescue crew.



#### WARNING

In situations where two or more survivors are to be lifted simultaneously, the weight-bearing limitations of the hoist system shall be considered, and not exceeded.

#### Note

All rescue devices immersed in salt water shall be inspected by proper O-level authority prior to being placed back into service.

5.3.1 Double Rescue Hook



- When hoisting personnel, the large hook of the double rescue hook (DRH) (see Figure 5-12) shall always be used, without exception. Under no circumstances is it permissible to use the small hook of the rescue hook to hoist personnel.
- Hoisting personnel by the equipment ring or small hook of the DRH may lead to failure of the ring or hook, and can result in injury or death of hoisted personnel.
- All other rescue devices can only be utilized in conjunction with the DRH.
- The DRH is the primary rescue device for helicopter and shipboard recovery. The DRH assembly includes a large hook rated at 3,000 lbs., a small hook rated at 1,000 lbs., and an equipment ring rated at 1,500 lbs. The large hook is the only attachment point authorized for hoisting personnel; it can also be used to hoist equipment, and cargo/mail. The small hook can be used for lightweight items only, such as mail. The equipment ring can be used to hoist light equipment and mail only. Both the large and small hooks have a spring-loaded latch to prevent inadvertent release of personnel or equipment.

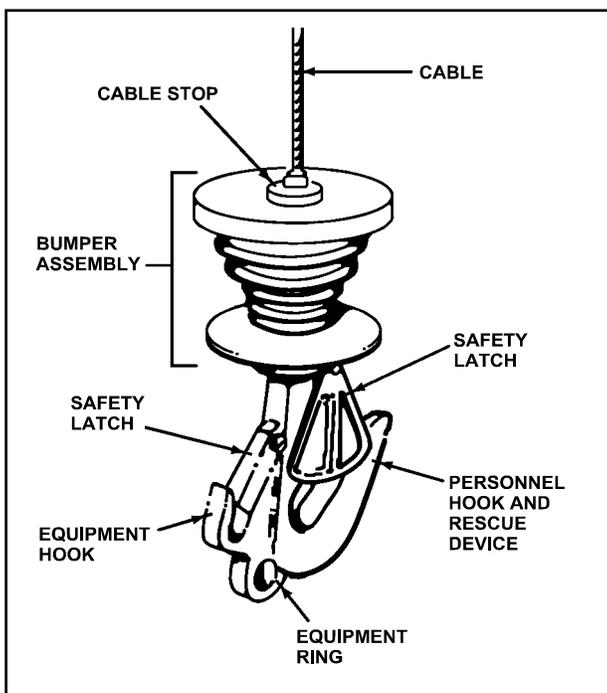


Figure 5-12. Double Rescue Hook

### Note

- All DRHs that are permanently attached to the aircraft shall be inspected IAW applicable T/M/S aircraft maintenance requirement cards (MRCs).
- Special inspections on DRHs not permanently attached to aircraft (such as aboard ship, or part of the hoist quick splice plate assembly) shall be performed when placed in service, and at regular intervals as prescribed by the applicable NAVAIR 13-1-6. (series) manual. Special inspections shall consist of a visual inspection and cleaning.

Cleaning and visual inspection of the DRH shall be the responsibility of organizational level. Repairs or other actions required shall be performed by intermediate level or above.

### 5.3.2 Rescue Strop



- The rescue strop (Figure 5-13) is primarily designed as a rescue device for uninjured personnel. If utilized for an unconscious or physically incapacitated survivor, all procedures outlined in paragraphs 1.4.2, 2.8.3.4, and 3.9.2 shall be strictly adhered to. Failure to properly use the retaining straps on the rescue strop may allow the survivor to slip out and fall.
- The rescue strop is an inherently buoyant device made of closed cell foam with an orange external cover. It is designed to accommodate one survivor. A webbing strap running through the cover has a V-Ring at both ends for attachment to the DRH. Two black retainer straps, one with a gated snap hook and the other with an adjustable curved V-Ring, are provided with the strap and fastened to the strop with the hardware ends secured with webbing keepers. Pictured “NATO” donning instructions are printed in black on cover.

All rescue strops shall be subjected to a special inspection and a proof load test. Special inspections shall be performed at issue at regular intervals as prescribed by the applicable NAVAIR 13-1-6. (series) manual.

The proof load test is performed on rescue strops after each use during which the rescue strop was excessively hit hard or possible overstress has occurred.

### 5.3.3 Rescue Litter (Stokes Litter) and Flotation Assembly

The rescue litter (also referred to as the Stokes litter), when fitted with a backboard, is used to immobilize a survivor who has sustained back injuries. The rescue litter is designed to accommodate one survivor, can be used over land or water, and can be hoisted into the helicopter or onboard ship. For use over water, the flotation assembly shall be installed in order to keep the rescue litter upright and stable. This assembly consists of flotation logs, chest pad, restraint straps, retainer straps, and ballast bar. The rescue litter hoisting sling (two piece) is utilized for helicopter/ship-hoisting purposes. The flotation logs support the upper half of the litter, keeping that portion high in the water, while the chest pad keeps the survivor’s face out of the water and the litter from floating face down. The survivor does not require any additional flotation device. Five restraint straps, stowed when not in use by four retainer straps, secure the survivor in the rescue litter. The ballast bar is placed on the foot of the litter and assists in keeping the litter floating at the proper angle. The rescue litter sling is color coded

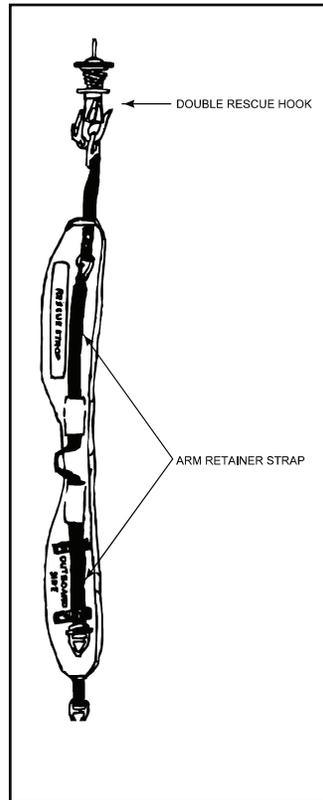


Figure 5-13. Modified Rescue Strop

along with the litter and once attached to the litter, can be attached to the DRH for hoisting. The flotation assembly may be removed from the litter and stowed in a separate carrying bag, which comes with the assembly.



If the survivor is wearing a buoyant antiexposure suit such as the Imperial dry suit, it will affect the flotation characteristics of the litter, and may negate the self-righting feature. More information on antiexposure suits can be found in Chapter 8.

**Note**

- The flotation kit shall be installed on the rescue litter (Figure 5-14) for all overwater missions.
- Use of patient restraint straps with hook-and-pile tape are no longer authorized. The rescue litter (stokes) is required to have the color-coded buckle-type patient restraint straps (P/N: 140).
- For helicopter trail-line procedures refer to Chapter 1. For shipboard trail-line procedures, refer to Chapter 2.

- For helicopter rescue litter deployment/recovery procedures, refer to Chapter 1. For shipboard rescue litter deployment/recovery procedures, refer to Chapter 2.
- For RS rescue litter procedures, refer to Chapter 3.
- The rescue litter flotation kit shall be added to the basic rescue stokes litter when used in SAR missions. To save space and for better stowage of the litter, the flotation logs and sling attached with the kit may be removed and stowed in a separate carrying case, which comes with the kit. The case containing the flotation logs and slings shall be readily available and attached when necessary.

**5.3.3.1 Build-up/Flotation Kit Assembly Procedures**

1. Patient restraint straps.

**Note**

- Use of patient restraint straps with hook-and-pile tape are no longer authorized. The rescue litter (stokes) is required to have the color-coded buckle-type patient restraint straps (P/N: 140).
- Place each end of the restraint straps in the positions illustrated in (Figure 5-15). The long strap is provided for the chest pad; the shorter straps are positioned across the lower legs. The straps are attached to 3/8-inch tubing by passing the loop end around the outside and under the tubing, passing between the tubing and wire. The wire will be cut from the tube. Open the loop and push the other end through. Pull the webbing to form a tight loop on the tube.

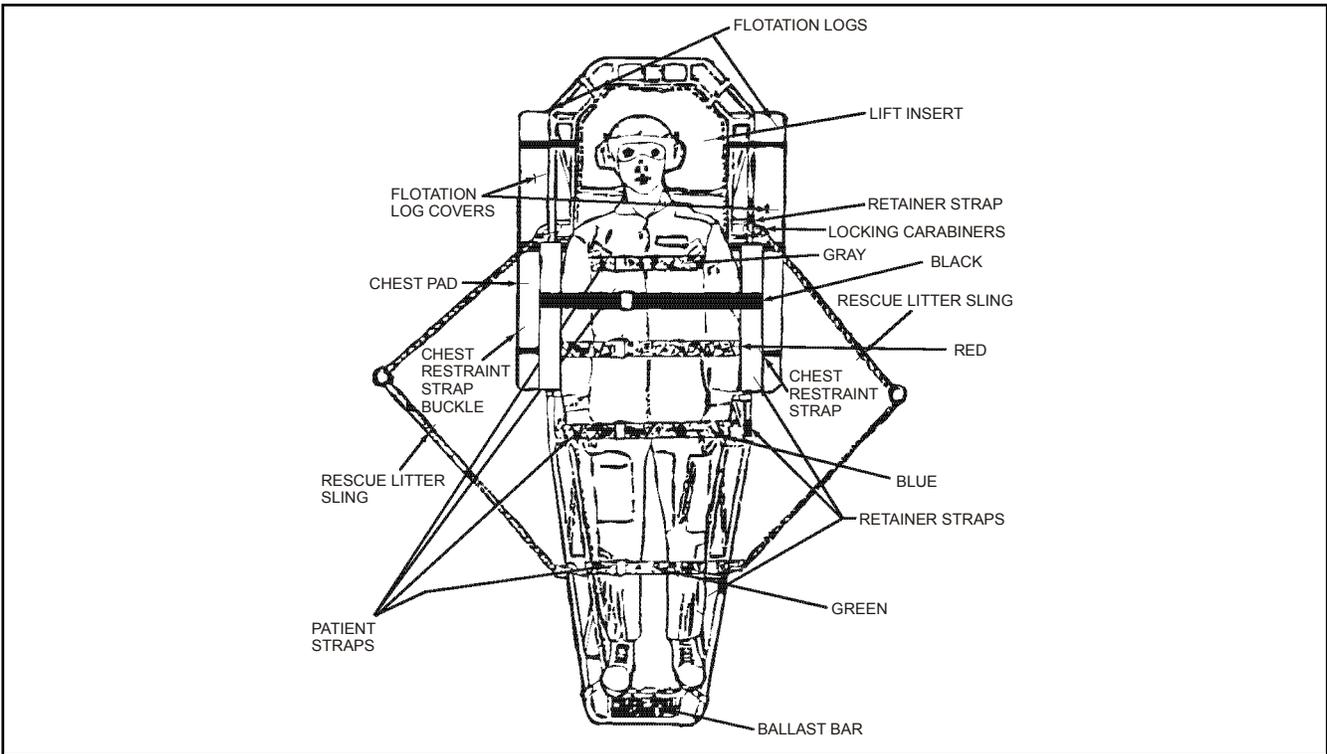


Figure 5-14. Patient Secured to Rescue Litter with Flotation Installed

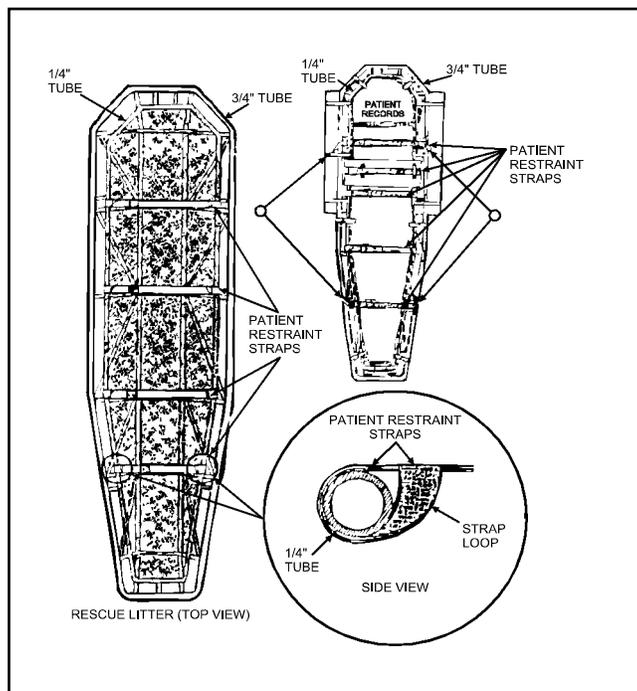


Figure 5-15. Rescue Litter Flotation Kit Patient Restraint Straps

2. Retainer straps (Figure 5-16). Position each strap on the 3/4-inch tubing above the long end of the patient restraint straps, except for the chest pad strap. Attach it to the 3/4-inch tube with plastic tie straps. Secure the accordion-folded patient restraint straps until used by RA.
3. Flotation logs (Figure 5-17). Position the logs as shown. Pass the male end of the plastic buckle over the 3/4-inch tube and between the 3/8-inch tube and wire. The wire will have to be cut from the tube. Snap the buckle together and adjust the strap by pulling on the free end. As the strap is tightened, rotate the log to keep the buckle close to the 3/8-inch tube; this position provides protection for the buckle.
4. Chest pad cover (Figure 5-18). Pass the free end of the long patient restraint strap through the loops on the chest pad.
5. Lift insert (Figure 5-19). When used, position the insert as illustrated in Figure 5-19 and snap the handles as shown.
6. Ballast bar (Figure 5-20). Position the lead ballast bar at the foot of the litter as illustrated in Figure 5-20 and securely attach the bar to the frame with the four heavy plastic tie straps provided. Carefully cut the excess length from the tie straps flush with the head of the tie after tightening.
7. Reflective Tape. Apply the reflective tape to the litter frame (3/4-inch tube) at the hoisting sling attachment points, as illustrated in Figure 5-21. Ensure that the red tape is positioned at the head attachment points and the white tape is positioned at the foot attachment points. To achieve proper functioning of this equipment all items must be installed at the positions illustrated in Figure 5-21.
8. Hoisting Sling. Attach the snap hooks to the 3/4-inch tube at the positions illustrated in Figure 5-22. Ensure that the short cable end (color-coded with a red locking carabiner) is affixed to the head attachment point of the litter. The long cable end (color-coded with a white locking carabiner) is affixed to the foot attachment point of the litter.

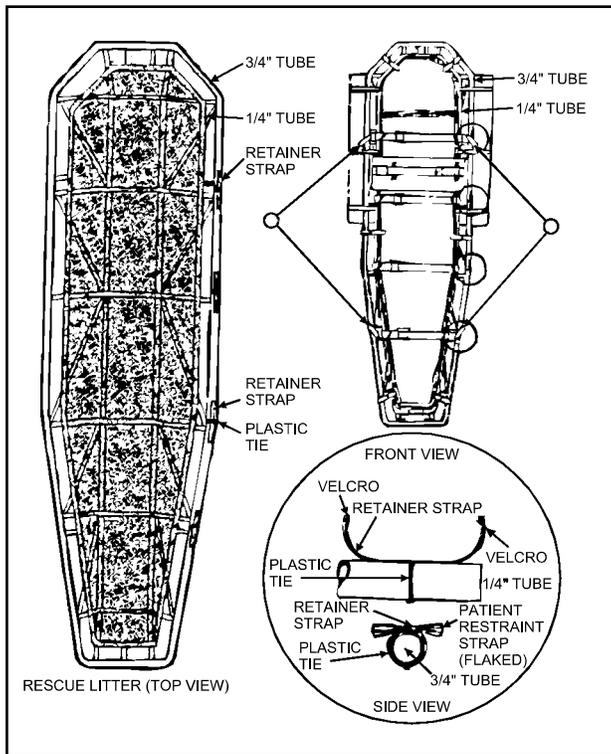


Figure 5-16. Rescue Litter Retainer Straps

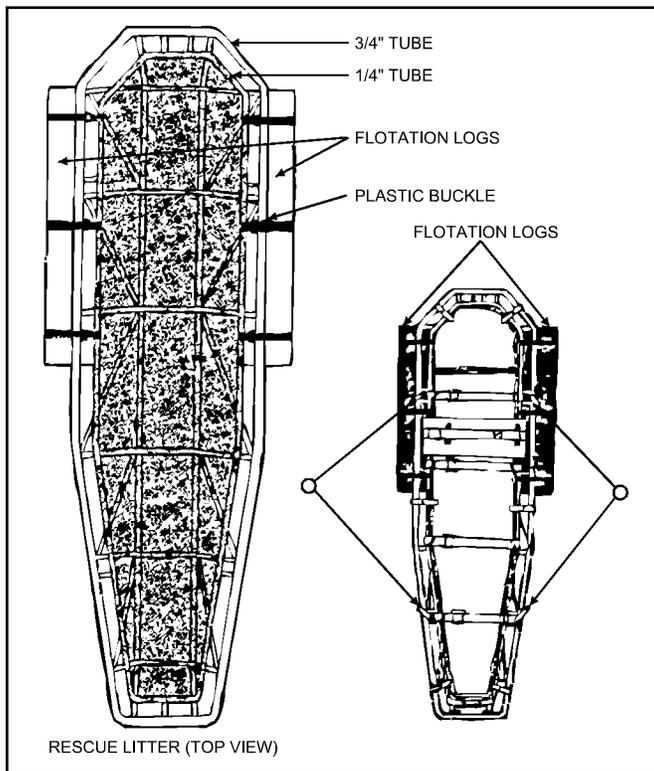


Figure 5-17. Rescue Litter Flotation Logs

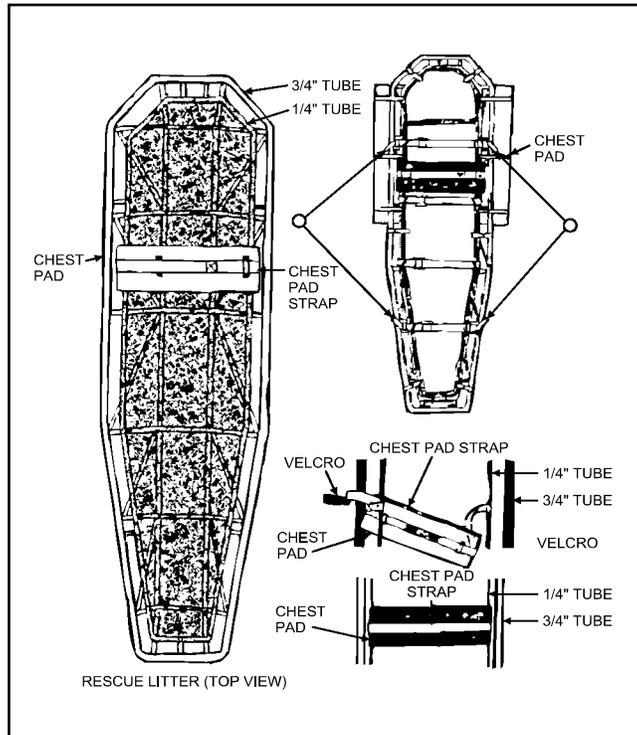


Figure 5-18. Rescue Litter Chest Pad Covers

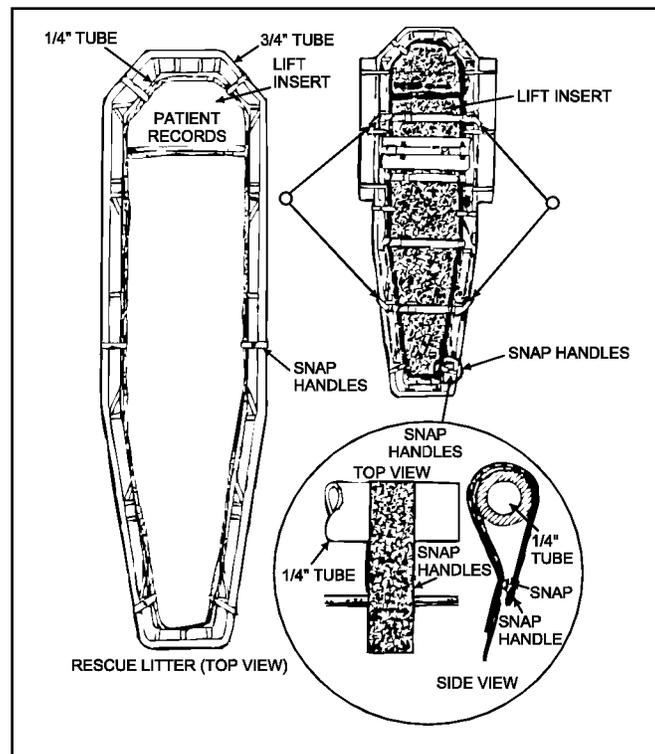


Figure 5-19. Rescue Litter Lift Insert and Patient Records Pocket Location

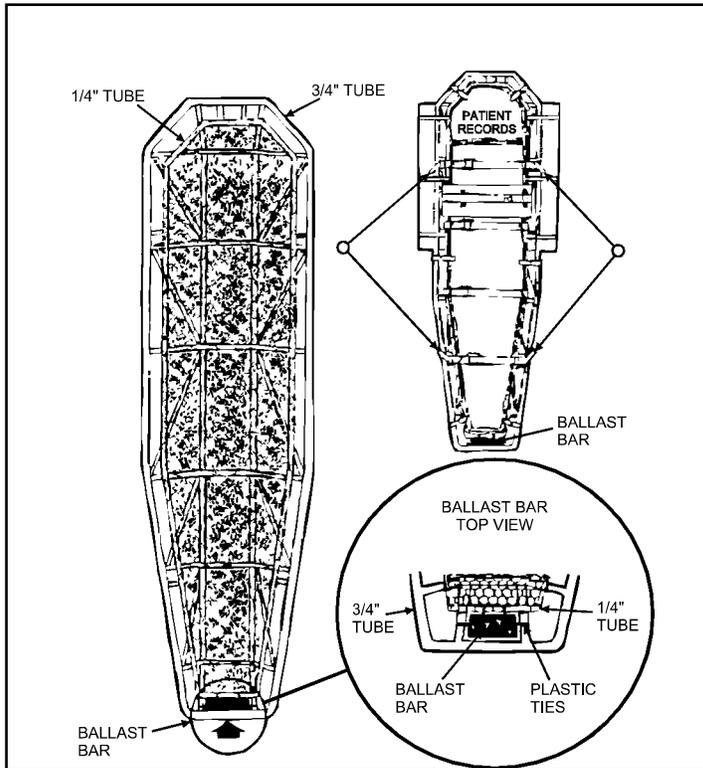


Figure 5-20. Rescue Litter Ballast Bar Location

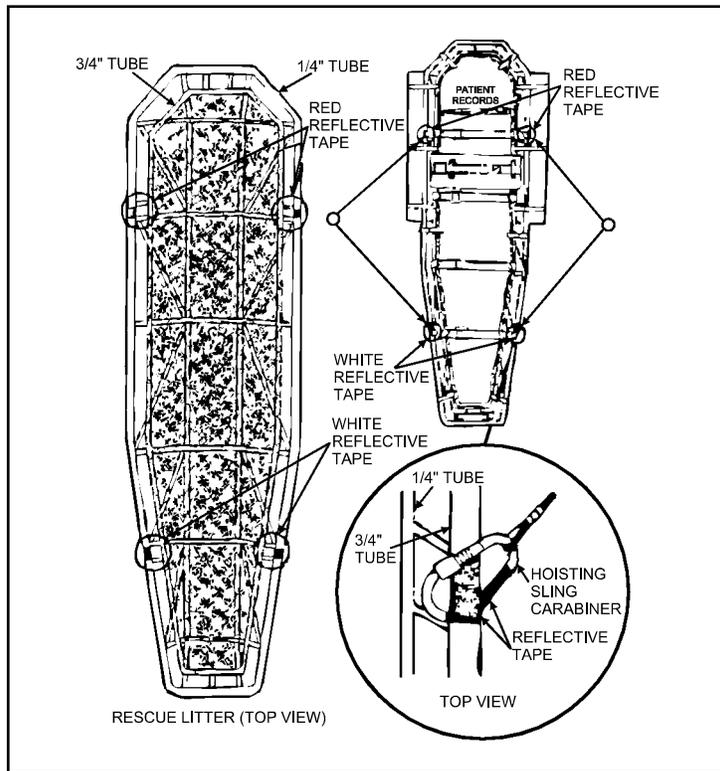


Figure 5-21. Rescue Litter Reflective Tape Locations

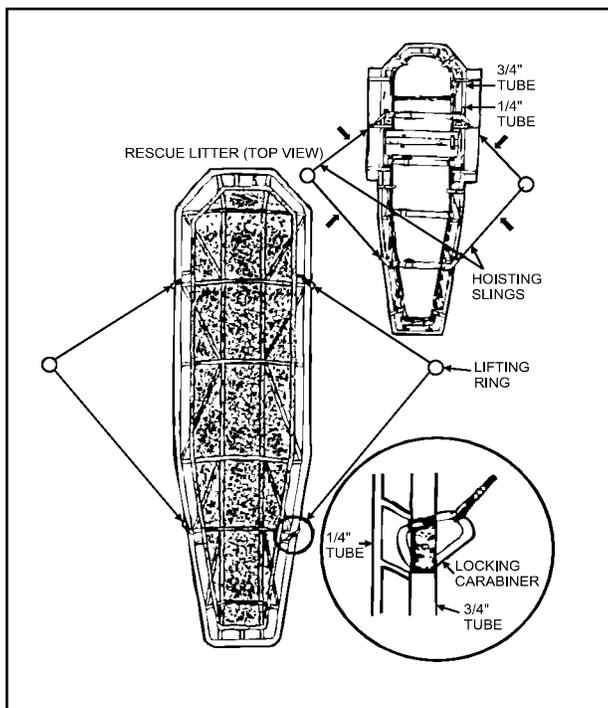


Figure 5-22. Rescue Litter Hoisting Sling Attachment Points

### 5.3.3.2 Inspection and Care

Maintenance operations shall be performed by organizational level or above.

Maintenance of the rescue litter assembly is limited to inspection and minor repair or replacement prior to placing in service. The rescue litter assembly shall be inspected after saltwater immersion, as well as prior to placing in service and at regular intervals as prescribed by the applicable NAVAIR 13-1-6. (series) manual.

### 5.3.4 SAR MEDEVAC Litter

#### Note

- The flotation kit shall be installed on the SAR MEDEVAC litter (Figure 5-23) for all overwater missions (Figure 5-24).
- Use of patient restraint straps with hook-and-pile tape are no longer authorized. The SAR MEDEVAC litter is required to have a new frame cover that integrates the color-coded buckle type patient restraint straps (P/N: 402-2).
- Two universally sized carrying harnesses are supplied for situations where the transporting personnel require free use of their hands Figure 5-23.
- For helicopter trail-line procedures refer to Chapter 1. For shipboard trail-line procedures, refer to Chapter 2.

- For helicopter MEDEVAC litter deployment/recovery procedures, refer to Chapter 1. For shipboard MEDEVAC litter deployment/recovery procedures, refer to Chapter 2.
- For RS MEDEVAC litter procedures, refer to Chapter 3.
- For vertical hoisting, attach the hoisting sling as illustrated in the MEDEVAC litter operation guide (Figure 5-25).

The SAR MEDEVAC litter is designed for water, shipboard, mountain, and other restricted area rescues. This litter replaces the Neil-Robertson litter on all submarines and is an alternative to the standard stokes litter. It has a low and narrow profile, floats with the patient's head slightly reclined from the vertical, and is able to be hoisted vertically with its own sling, or horizontally using the standard rescue litter sling and trail line assembly. The litter folds in half for shipboard movements, rappelling, backpacking, or stowage. Hands-free transporting is permitted with the two carrying harnesses supplied. The litter is constructed of stainless steel, the case and bed of nylon ballistic cloth, the restraint straps (Velcro) use polyester hook tape with a nylon loop tape, and the zippers are heavy duty and noncorrosive. Fully rigged, it weighs approximately 40 pounds and measures 80 inches long and 16-1/2 inches wide.

**5.3.4.1 Build-up Procedures**

**Note**

The SAR MEDEVAC litter must be lifted off case before unfolding, in order to prevent litter from catching in the case.

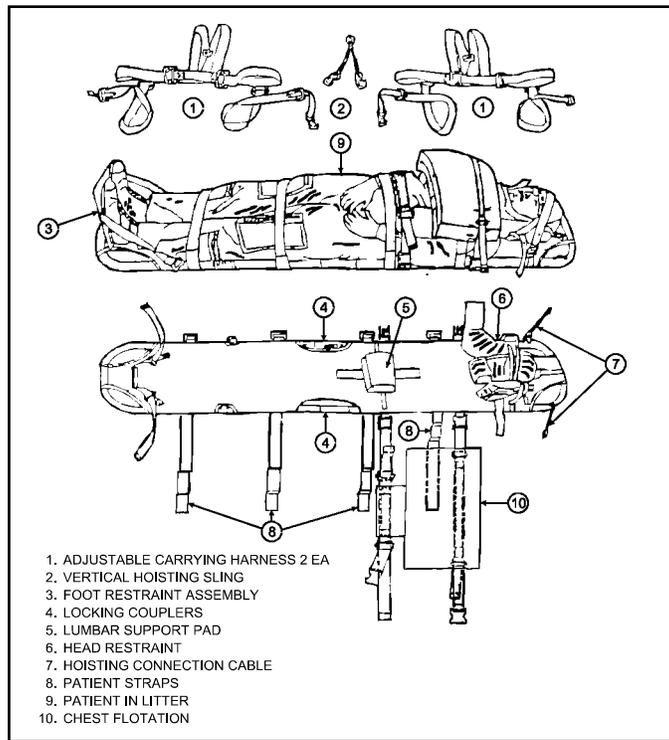


Figure 5-23. SAR MEDEVAC Litter

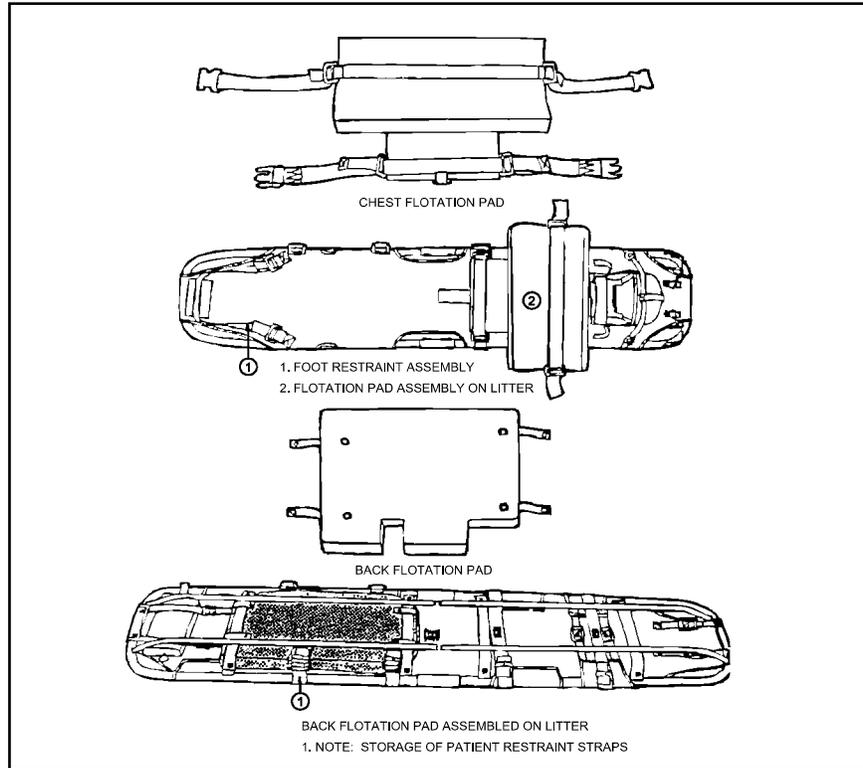


Figure 5-24. SAR MEDEVAC Litter Flotation System and Chest Pad

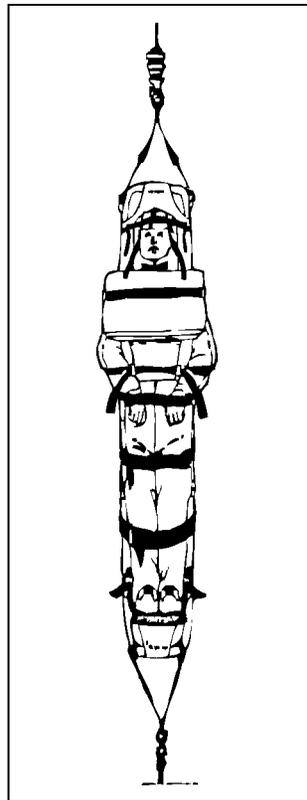


Figure 5-25. SAR MEDEVAC Litter Vertical Hoisting

1. Lay litter in case horizontally with instruction pockets up. Unzip case and lift folded litter off case and place on a flat surface.
2. Raise foot section approximately 90° and line up plastic guide pin of center couplers (Figure 5-26). Lower foot section in place.
3. Depress pins and slide couplers forward into the locked position (Figure 5-27).
4. Ensure that the locking pins have fully engaged the coupler (Figure 5-28).

**Note**

- Carefully stow the patient restraint straps after each use. The upper two straps must be folded shorter than the lower straps. The end tab on the straps should extend slightly from the fold, but ensure that the main folds do not extend beyond the edge of the litter frame or you will have difficulty closing the case
- For stowage, position the chest pad lengthwise on the upper section and push it up against the head restraint device.

**5.3.4.2 Inspection and Care**

Maintenance operations shall be performed by organizational level, or above.

Maintenance of the SAR MEDEVAC litter is limited to minor repairs or replacement of parts.

Inspections shall be performed prior to placing the MEDEVAC litter in service, and at regular intervals as prescribed by the applicable NAVAIR 13-1-6. (series) manual.

**Note**

- Ensure both litter-mounted hoist cables are inspected during the special inspection.
- For Kings Point Inc. – manufactured litter cables: Inspect the swagging sleeves for three crimps, identified by compressions on sleeves. Inspect the swagging sleeves for corrosion on sides and in ends. Inspect the cables for worn or broken wires at sleeves and along cable.

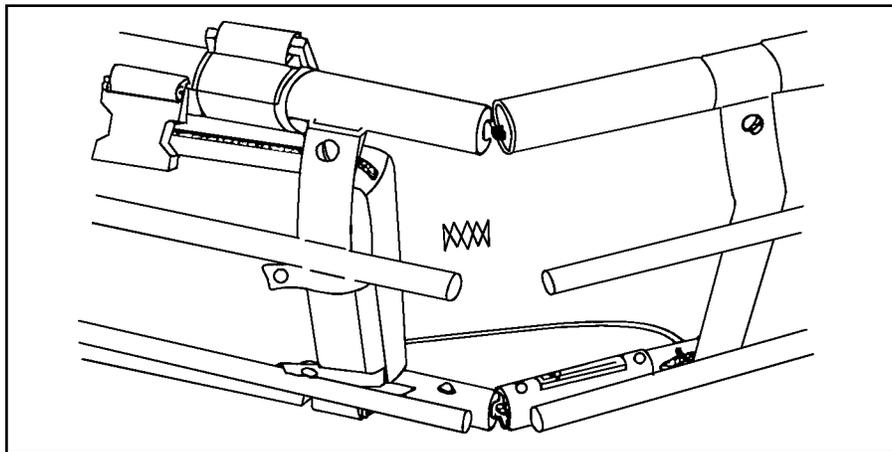


Figure 5-26. Alignment of SAR MEDEVAC Litter Locking Couplers

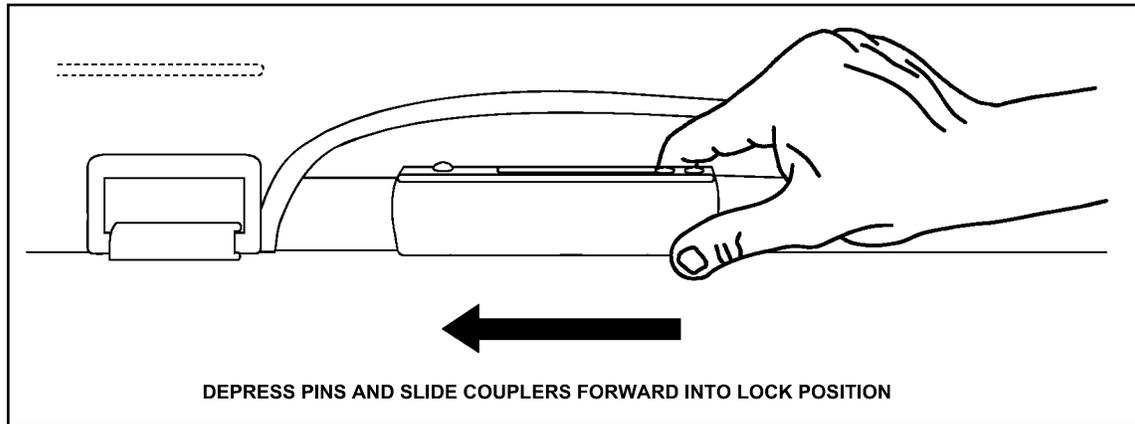


Figure 5-27. Secure SAR MEDEVAC Litter Locking Couplers into Locked Position

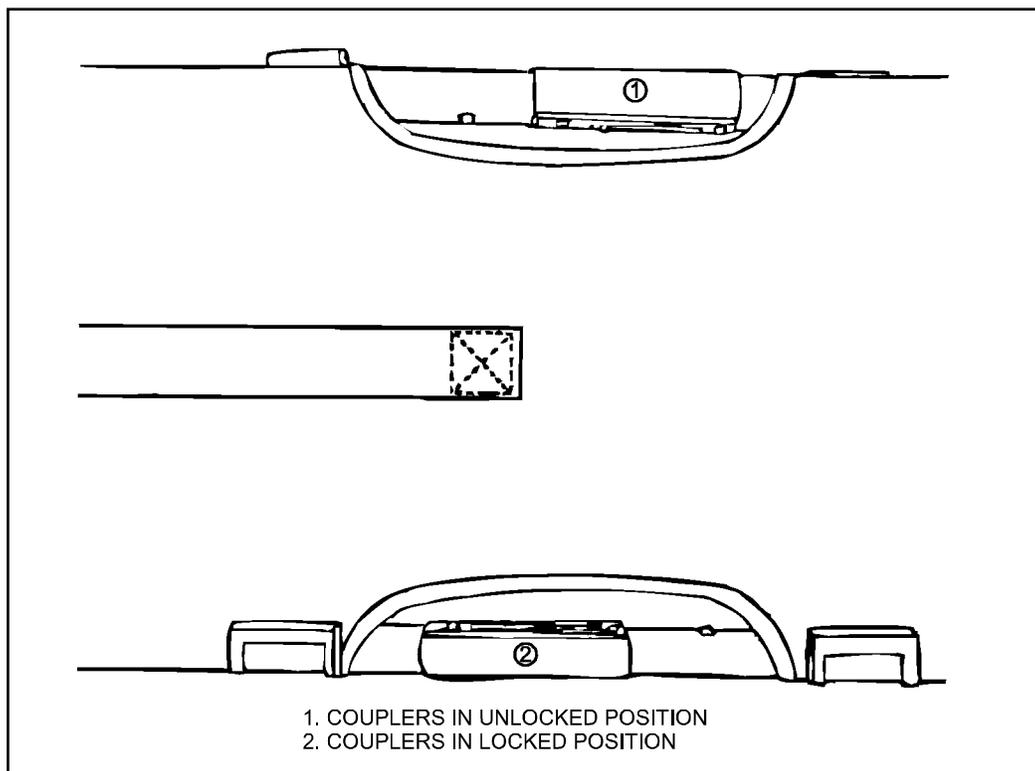


Figure 5-28. Ensure That the Locking Pins Have Fully Engaged the Coupler

**Note**

- For Lifesaving Systems Co. – manufactured litter cables: Inspect the litter attachment end swagging sleeves for three crimps, identified by compressions on sleeves or a single 1/2 inch crimp. Inspect the swagging sleeves for corrosion on sides and in ends.
- For MEDEVAC litters manufactured after 1988: The swagging sleeves may have a single 1/2-inch-wide crimp, which is unique to the manufacturer. Inspect sling attachment end swagging sleeves for one crimp, identified by a 1/2-inch-wide compression. Inspect the swagging sleeves for corrosion on sides and in ends. Inspect the cables for worn or broken wires at sleeve and along cable.

A proof load test on the MEDEVAC litter, litter-mounted hoist cables, and vertical sling shall be performed by organizational activities during the conditional inspections. (See applicable NA level 13-1-6. (series) manual.)

**Note**

The vertical sling and litter with matched serial numbers shall be proof load–tested together. The MEDEVAC litter’s vertical sling is always carried in a pouch sewn to the backside of the MEDEVAC litter. This vertical sling is not to be confused with the hoisting sling assembly.

**5.3.5 Rescue Net (Aviation Only)**



**WARNING**

Improper rescue net build-up could result in the collapsing of the rescue net, which may result in the survivor(s) drowning.

**Note**

Rescue net build-up (Figure 5-29), deployment/recovery procedures can be found in Chapter 1.

The rescue net is a collapsible, buoyant device designed to accommodate one or two survivors. A lifting ring for hoisting is located at the top or upper portion of the net, along with locking support rods. These rods incorporate sliding sleeves to prevent the net from collapsing while occupied. At the front of the net are two additional support rods that can be disconnected from the top section when stored. The net weighs between 30 and 40 lbs. and is international orange for high visibility.

Cleaning of the rescue net shall be the responsibility of organizational level. Repairs or other actions required shall be performed by intermediate level, or above. All rescue nets shall be subjected to a special inspection. The special inspection shall consist of a visual inspection. Special inspection shall be performed upon issue, and at regular intervals as prescribed by the applicable NAVAIR 13-1-6. (series) manual.

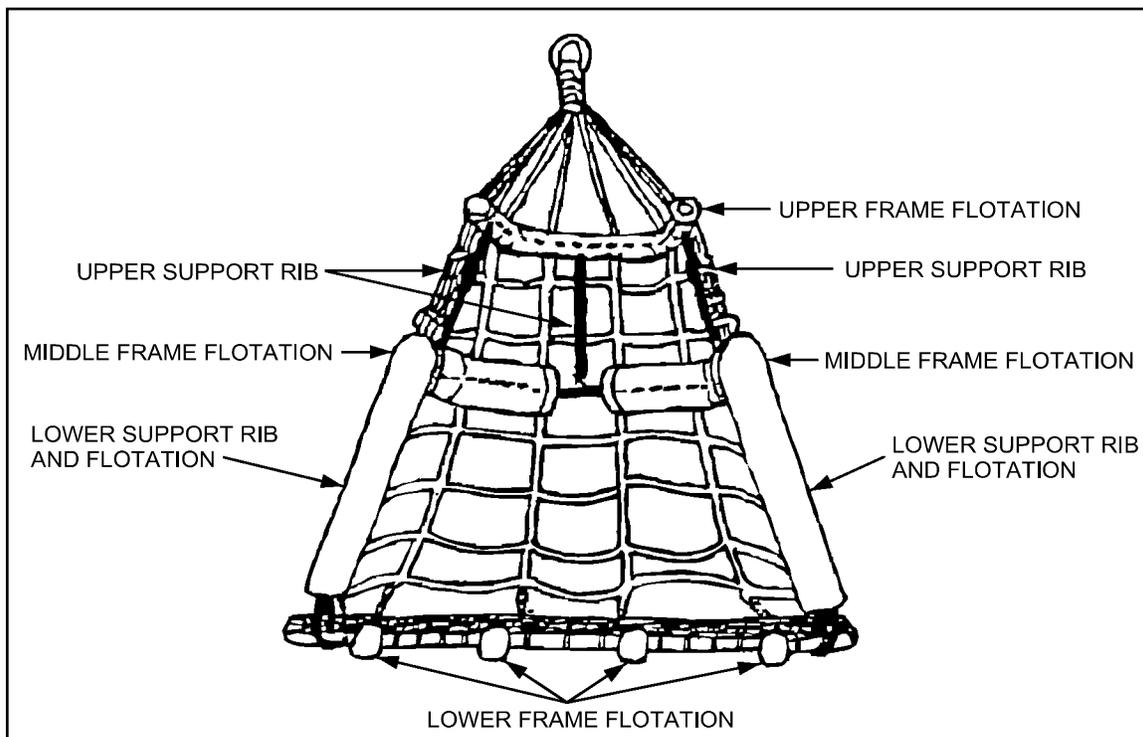


Figure 5-29. Rescue Net Built Up

### 5.3.6 Rescue Seat (Aviation Only)

#### Note

Rescue seat deployment/recovery procedures can be found in Chapter 1.

The rescue seat (Figure 5-30) is used to assist rescue personnel for both land and sea operations. The rescue seat is designed to accommodate one or two personnel. The rescue seat will replace the forest penetrator through attrition. The rescue seat weighs approximately 18 pounds.

There are two folding seats incorporated in the device. When the seats are folded, the device dimensions measure 31.5 inches in height by 9 inches in width and 6.5 inches in depth. When both seats are extended, the device dimensions are 31.5 inches in height by 27.5 inches in width by 6.5 inches in depth. The rescue seat is equipped with two adjustable safety straps that incorporate a snap hook, friction adjuster, and V-Ring to secure personnel to the seat. A bright orange flotation collar may also be incorporated, complete with pictorial instructions for the survivor to use.

Special inspections shall be performed at time of place in service, and at regular intervals as prescribed by the applicable NAVAIR 13-1-6. (series) manual. A special inspection shall also be performed after an excessively hard hit, or possible overstress occurrence. All special inspections shall consist of a visual, markings, and special load (conditional inspection only) and tension (push/pull) inspection of the rescue seat.

The visual, load and tension (push/pull) tests and cleaning shall be the responsibility of the organizational level maintenance. All other inspection or maintenance actions required shall be performed by intermediate level, or above.

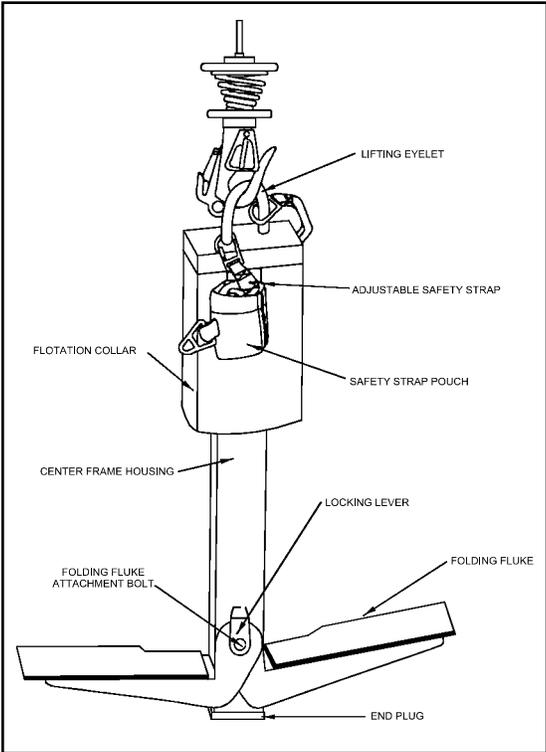


Figure 5-30. Rescue Seat

**5.3.7 Hoisting Vest — Aviation Only/Donning**

**Note**

- Hoisting vest deployment/recovery procedures can be found in Chapter 1.
- The hoisting vest (Figure 5-31) is not a device to be used for water rescues; it can be used for overland rescue and shipboard transfer of personnel, provided flotation devices are employed.
- The hoisting vest is constructed of lightweight nylon mesh material and is designed to accommodate one person. To ease donning and size adjustment of the vest, two rings are provided for each of four snap hooks. Two adjustable chest straps shall be attached to the lifting V-Ring for hoisting. Because the vest takes up little room and is easily donned, it is an excellent device for ship-to-helicopter or helicopter-to-ship transfer of uninjured or ambulatory personnel.

1. Step through leg openings and draw the vest up.
2. Place arms through openings (coat fashion), and pull the vest over the shoulders with the opening to the front.
3. Connect the snap hooks to the rings.
4. Attach the back-support straps with the snap hooks to the lifting V-Ring.
5. Connect the lifting V-Ring to the DRH.

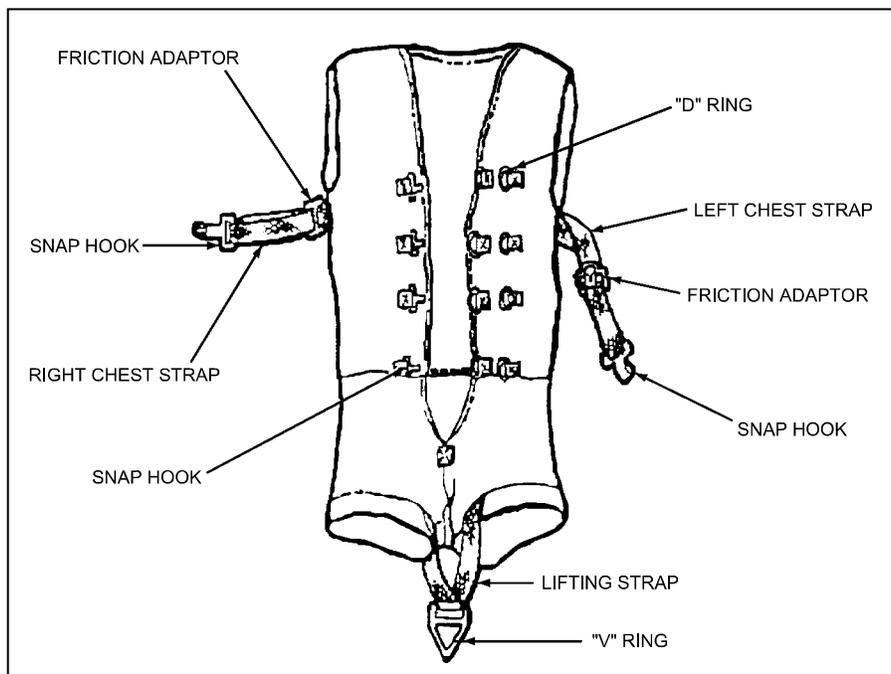


Figure 5-31. Hoisting Vest

**Note**

- The trail-line procedures may be used to increase the safety of the transfer.
- The RS shall be lowered to the ship if the deck crew is not familiar with these procedures.
- The hoisting vest shall be inspected prior to placing in service and at regular intervals as prescribed by the applicable NAVAIR 13-1-6. (series) manual.

**5.4 SUPPLEMENTAL HELICOPTER RESCUE EQUIPMENT**

The helicopter rescue crew uses this equipment in conjunction with the rescue devices (Paragraph 5.3) during rescue operations.

**Note**

All supplemental helicopter rescue equipment immersed in salt water shall be inspected by proper O-level authority prior to being placed back into service.

**5.4.1 Helicopter Rescue Equipment Bag/H-60 Rescue Equipment Bag, Small**

The helicopter rescue equipment bag P/N1682AS100-1 (NIIN 01-243-4523) and P/N 261 (Figure 5-32) are both made of heavy-gauge nylon with urethane coating on the backside and have labeled pockets with hook-and-pile tape resealable flaps. P/N 1682AS100-1 measures 28 x 44 inches with twelve pockets and P/N 261 measures 17 x 44 inches with ten pockets. The bag should be mounted near to the hoisting station for ease of access to equipment, and be secured from support rails, tie-down rings, etc. within the helicopter.

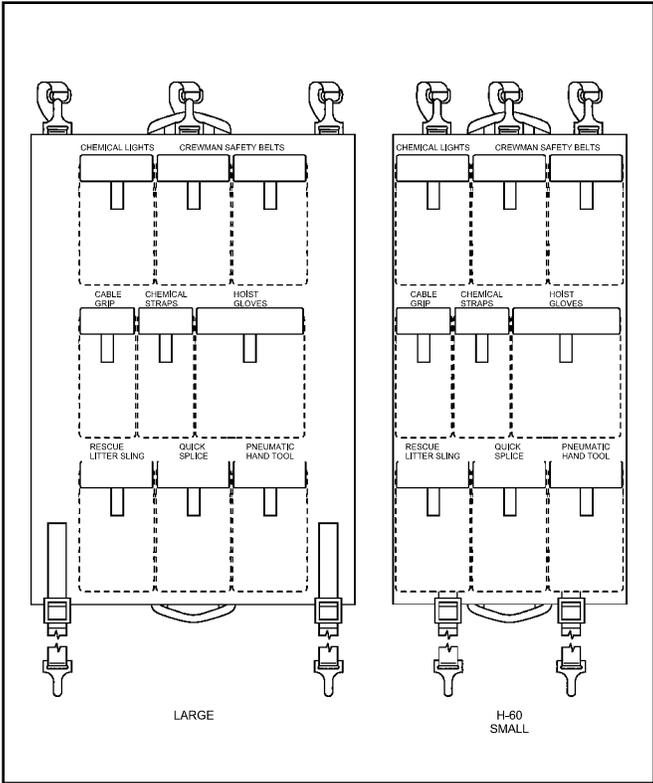


Figure 5-32. Helicopter Rescue Equipment Bag and H-60 Rescue Equipment Bag, Small

**Note**

- Maintenance operations shall be performed by organizational level, or above. Maintenance on the helicopter rescue equipment bag is limited to inspection, minor repair, or replacement.
- The helicopter rescue equipment bag shall be inspected prior to placing in service, and at regular intervals as prescribed by the applicable NAVAIR 13-1-6. (series) manual.
- Inspect all required equipment located in the helicopter rescue equipment bag IAW the applicable NAVAIR 13-1-6. (series) manuals.
- NAVAIR considers the Aldis Lamp ancillary aircraft equipment. As such, it is no longer considered supplemental helicopter rescue equipment.

**5.4.1.1 Hoisting Gloves**

The hoisting gloves (MIL-G-2366) are made of heavy-duty leather, and are worn by the rescue hoist operators. Hoisting gloves are used during hoist operations to protect the operator’s hands from burns, chafing, or cuts caused while guiding the cable during hoist operations. Hoisting gloves are part of the helicopter rescue equipment bag (BGU-8/N and P/N 261).

### 5.4.1.2 Crewman's Safety Belt



- The crewman's safety belt (MS16070-2, MS16070-3, and MS16070-21) must be worn snugly to prevent inadvertent release of latch mechanism.
- Being hooked into more than one safety device (gunner's belt, crew seat restraint belt, large rescue hook) at one time may be hazardous to personnel should the helicopter encounter an emergency and have to ditch. When transitioning from a crewman's safety belt to a helicopter seat or rescue hoist DRH, immediately release the crewman's safety belt after attached to helicopter via another means (i.e., seatbelt, rescue hoist, etc.).
- Crewmen shall ensure that the amount of slack in the crewman's safety belt is short enough to preclude ejection from the cabin area in the event of an aircraft ditch.
- Attaching crewman safety belts to tie-down rings is not authorized in certain aircraft. Refer to applicable T/M/S NATOPS manual for guidelines when determining where to attach the crewman safety belt.

#### Note

- The crewman's safety belt MS16070-21 will replace the MS16070-2 and MS16070-3 by attrition P/N MS16070-21, includes webbing retarding springs, and uses snap hook P/N MS70120. This snap hook is not compatible with the H-3 crew station 346.
- Inspect belt for thickness of material on webbing ends. Belts shall have four layers of material to deter webbing end from pulling through waist adjustment adapters. Belts having less than four layers, thickness shall be modified to provide additional thickness. Crewmember's aircraft safety belts, which cannot be adjusted outward sufficiently to encompass the aircrew member when wearing body armor or other bulky items, may be lengthened. All modifications to the crewmember's aircraft safety belt must be performed IAW the NAVAIR 13-1-6.5 manual.
- SAR commands shall include one extra crewman's safety belt (above normal crew requirement) in the helicopter rescue equipment bag/H-60 rescue equipment bag for use with the cable grip.

When in use, the crewman's safety belt allows free and safe movement within a limited area inside the aircraft. The crewman safety belt, sometimes called a gunner's belt, is used as a restraint and safety device. The procedures for wearing of the crewman safety belt are as follows:

1. Take the belt portion and put it around the chest under the armpits and secure, adjusting to chest size.
2. Attach the strap portion to the approved aircraft tie-down in the deck or to a seat belt and adjust the length of the strap to remain within the aircraft when extended.

Constructed of nylon webbing, the belt is provided with pull-tabs and adapters for size adjustment and has a latch-link assembly for easy donning. Meshed to the back of the belt is a length-adjustable heavy nylon strap with a snap hook for attachment to a tie-down fitting. Additionally, the crewman’s safety belt can be used with the cable grip (see Paragraphs 1.8.2.1 and 5.4.1.3) to secure a hoisting cable in the event of a jammed or failed rescue hoist.

**5.4.1.3 Cable Grip**



After an actual load is supported by the cable grip, the CC shall ensure its turn-in, and proper paperwork initiated for special inspection.

**Note**

Cable grip procedures can be found in Chapter 1.

The cable grip (Figure 5-33) consists of two jaws, which open and close onto the cable, and a shackle, which enables the cable grip to be attached to the air crewman’s safety belt to take the weight of the hoist load off the hoist brake assembly during a hoist failure. The cable grip is capable of supporting 1,000 pounds.

**5.4.1.4 Chemical Lights**

**Note**

The shelf life of the chemical light (Figure 5-34) is 4 years when left in an undamaged foil wrapper.

Do not remove foil from chemical light unless intending to use it. Once the foil is broken, the chemical light’s shelf life is greatly decreased.

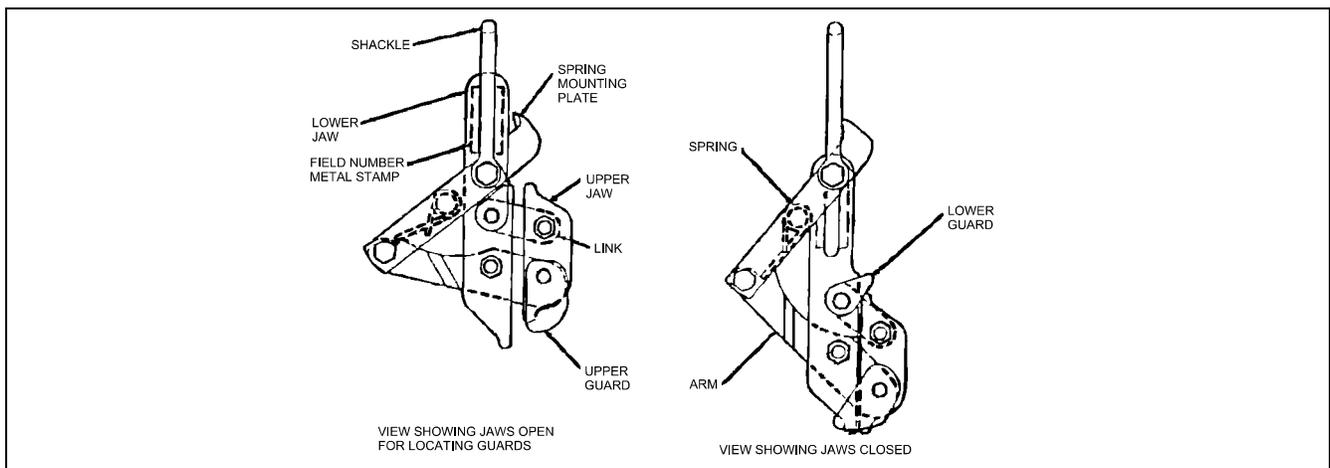


Figure 5-33. Cable Grip

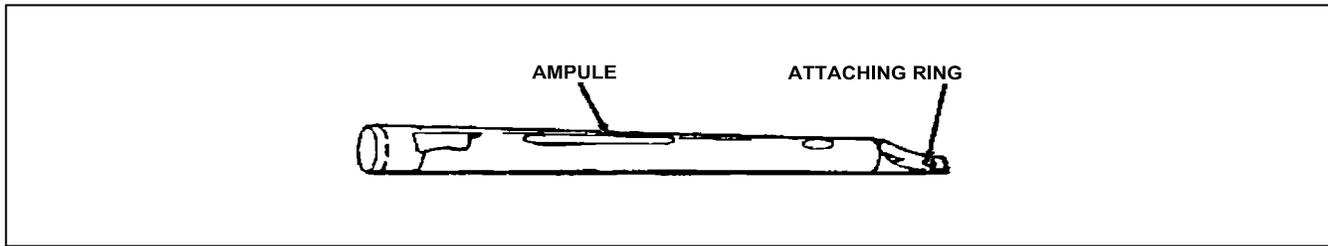


Figure 5-34. Chemical Light

The chemical light is a foil-wrapped plastic wand, which emits a chemically activated light useful during nighttime rescue operations. The chemical light consists of a plastic tube that encases two chemicals, one of which is in a thin glass vial. When the plastic tube is flexed and shaken, the vial breaks, the two chemicals mix, and light is emitted. Six-hour general-purpose chemical lights are available in 4-inch (NIIN 00-106-7478) and 12-hour 6-inch (NIIN 01-074-4229) sizes; these emit a green light. A 30-minute high-intensity yellow (NIIN 01-074-4230) is also available. Each light is foil wrapped to protect it from humidity and to increase its shelf life.

**5.4.1.5 Chemical Light Strap**

The chemical light strap (Figure 5-35) is a lightweight nylon strap device used to attach chemical lights to most rescue devices or hooks. The chemical light strap device consists of three snap-hooks connected by a single length of 1-inch nylon webbing strap.

**5.4.1.6 Hoisting Sling Assembly**

The hoisting sling assembly (Figure 5-36) is designed for quick attachment to/detachment from the rescue or SAR MEDEVAC litter assemblies. The hoisting sling assembly is a two-part (one sling for each side of the rescue/MEDEVAC litter) system, used in conjunction with the trail line assembly (Figure 5-37) for transport from the ground, ship, or water to the SRU.

The hoisting sling assembly is constructed of two sets of stainless steel 5/32-inch cables. Each cable set contains two lengths of cable (33 inches and 41 inches), which are attached to one another by a 1 1/2-inch x 5/16-inch stainless steel lift ring. Each cable set has a pair of thimbles, two swagging sleeves, and two color-coded locking carabiners. The 33-inch cable is attached to the head of the litter by the red color-coded carabiner, and the 41-inch cable is attached to the foot of the litter by the white color-coded carabiner.

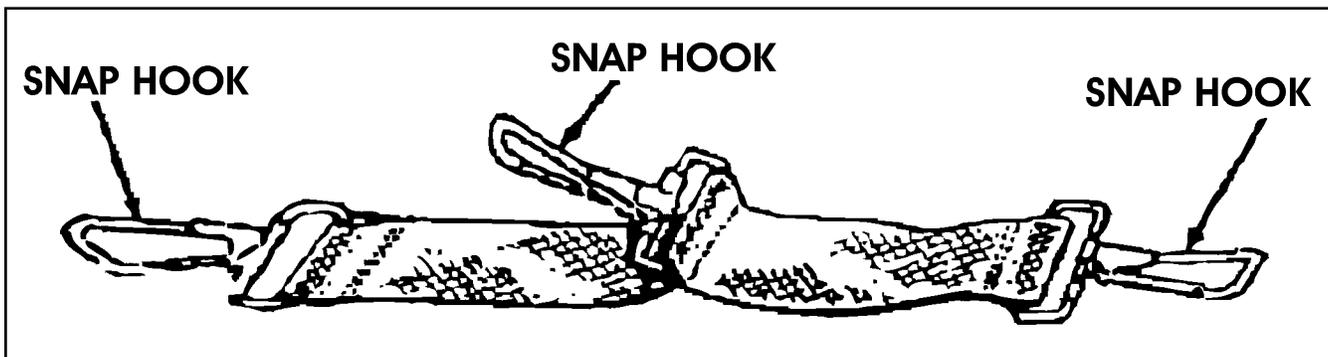


Figure 5-35. Chemical Light Strap

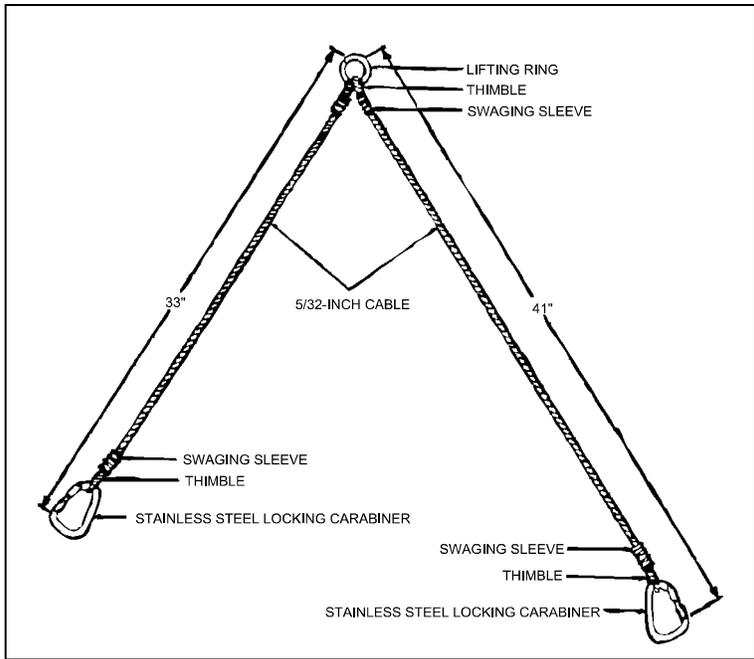


Figure 5-36. Hoisting Sling Assembly for Both the Rescue Litter and SAR MEDEVAC Litter

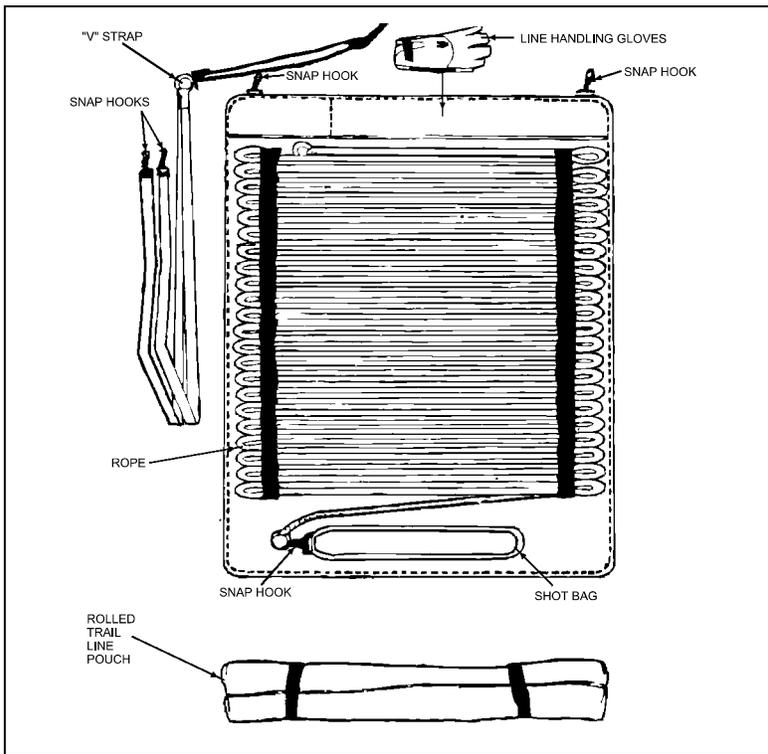


Figure 5-37. Trail-Line Assembly

**Note**

Hoisting sling assembly is coded as a consumable; however, replacement of the white or red reflective tape is authorized.

**5.4.1.7 Trail Line Assembly**

**Note**

- Helicopter trail-line procedures can be found in Chapter 1; shipboard trail-line procedures can be found in Chapter 2.
- The trail line assembly is used to control and guide rescue equipment to the desired location during helicopter and shipboard hoisting operations.

**Note**

- The trail line assembly P/N 220, NIIN 01-312-4854) consists of a pack (P/N 1554AS301-1, NIIN 01-226-5135) containing 120 feet of 3/8-inch polyethylene or polypropylene rope, a weak link (approximately 450 pounds breaking strength), one 5-pound shot bag, a V-strap for rescue/MEDEVAC litter hoisting, and trail-line gloves. All hardware is made of stainless steel and bronze for corrosion resistance.
- Replace trail line weak-link assembly as necessary.

**5.4.1.8 Hoist Quick Splice Plate**

**Note**

Hoist quick splice plate (Figure 5-38) procedures can be found in Chapter 1.

The hoist quick splice plate is constructed of 1/4-inch aluminum, is 6 5/8 inches in length, and 3 inches in width. The corners are rounded and holes are grooved in places where the hoist cable rests. A 1/32-inch-thick stainless steel clip is attached to the plate with two 5/32-inch steel rivets. A DRH is attached to the plate with thimbles, swagging sleeve, and a length of hoist cable. The distance between DRH and hoist quick splice plate is 6 inches (+/- 1 inch).

The hoist quick splice plate is intended for use when the hoist cable has been intentionally cut. The bitter end of the severed cable is threaded through five numbered holes and secured with a stainless steel clip. Once the hoist quick splice plate is attached to the cable, the DRH is used to complete the rescue.

**5.4.1.9 Pneumatic Rescue Hand Tool**

The pneumatic rescue hand tool (Figure 5-39) provides the crewman with a readily available cable cutter. The chamber of the handle holds a 3,000 psi nitrogen gas cylinder, which, when triggered, forces a piston against the cutting edge of the tool. The hand tool can also be used by the RS as a riser and shroud cutter, and has a jaw that can be used for prying open or breaking canopies.

The case is made of nylon webbing, 12 1/2 inches long and 5 3/4 inches wide at the top, tapering to 3 1/4 inches wide at the bottom. A 46-inch lanyard and baby swivel hook, attached to the upper grommet, are designed for attachment to the pneumatic rescue hand tool. Two front pockets secure two additional nitrogen gas cartridges for easy accessibility.

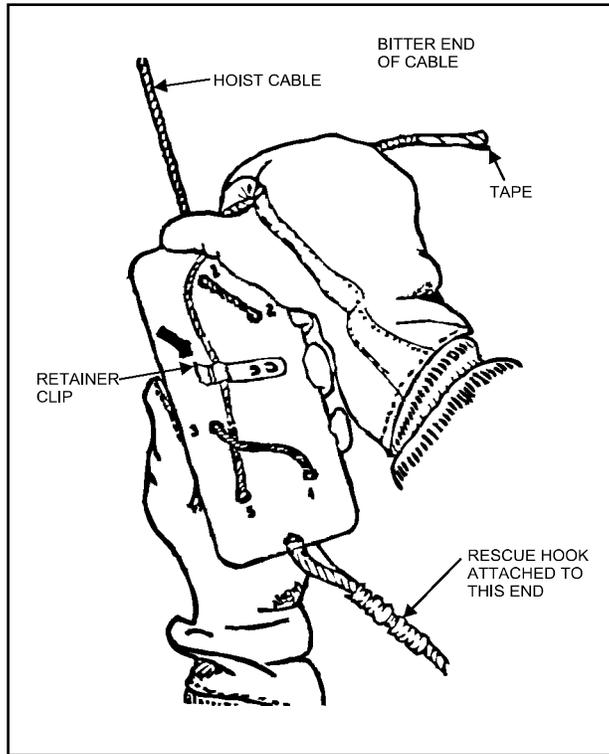


Figure 5-38. Hoist Quick Splice Plate

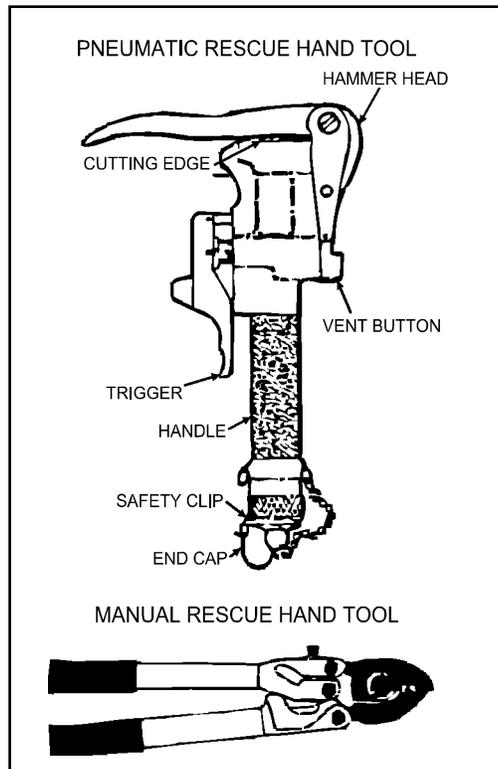


Figure 5-39. Pneumatic Rescue Hand Tool and Manual Rescue Hand Tool/SAR Cable Cutter



The pneumatic rescue hand tool is pressurized to 3,000 lbs. and may be hazardous if cover removal is attempted before venting.

**Note**

N2 cartridges may not be available through supply systems. N2 cartridges are available from the manufacturer (CAGE 97619).

**5.4.1.9.1 Pneumatic Rescue Hand Tool Preflight**

Ensure that the cylinder has not been expended and no residual pressure remains in the hand tool by squeezing the trigger and at the same time depressing the vent button under the spring-loaded cover.



Unscrewing the knurled cap at the base of the handle of a pressurized hand tool may result in injury to personnel.

1. Unscrew the knurled cap at the base of the handle and check cylinder for puncture.
2. Insert a new gas cylinder if needed. The end of the cylinder having the larger flat surface should be visible.
3. Insert the safety clip in the groove located between the knurled cap and movable button.
4. Replace and tighten cap until snug against the end of the cylinder.
5. A gap of 0.001 to 0.047 of an inch may exist between the end of the handle and the face of the cap.

**5.4.1.9.2 Pneumatic Rescue Hand Tool Operation**

The CC can use the hand tool to cut the hoist cable should it become necessary. The RS can use the hand tool to cut risers, shroud lines, etc. To use this device, the following procedures apply:

1. Remove the safety clip attached to the bottom of the hand tool.
2. Hit the cap button sharply with the palm of the hand. This will puncture the gas cylinder and release the gas into the handle.
3. Slide the cable, shrouds, or risers, etc., into the slot containing the cutting edge and pull the trigger.
4. After using the hand tool, depressurize the cylinder and reload.

#### 5.4.1.10 Manual Rescue Hand Tool/SAR Cable Cutter

The SAR cable cutter (Figure 5-39) is designed to cut 5/32-diameter cable. The SAR cable cutter is to be used as either a replacement to or a backup of the pneumatic hand tool in cutting cable for SAR operations.

#### Note

When the manual rescue hand tool fails a functional test, it shall be replaced with the SAR cable cutter.

#### 5.4.1.11 Wool Blanket

Wool blankets are part of the helicopter rescue equipment bag (BGU-8/N), carried on SAR-capable rotary-wing aircraft for treatment of hypothermia.

#### 5.4.1.12 Cranial Assembly

The cranial assembly (Figure 5-40) is a cloth helmet with chinstrap designed to incorporate protective devices; rigid plastic with cushion liners snap on for head protection, sound suppressors for hearing protection, and goggles for eye protection shall be included.

#### Note

- Passenger cranial assemblies shall be taped IAW NAVAIR 13-1-6.7-3.
- Proper care and use of the cloth helmet assemblies is essential to ensure optimum performance during emergencies and routine operations.

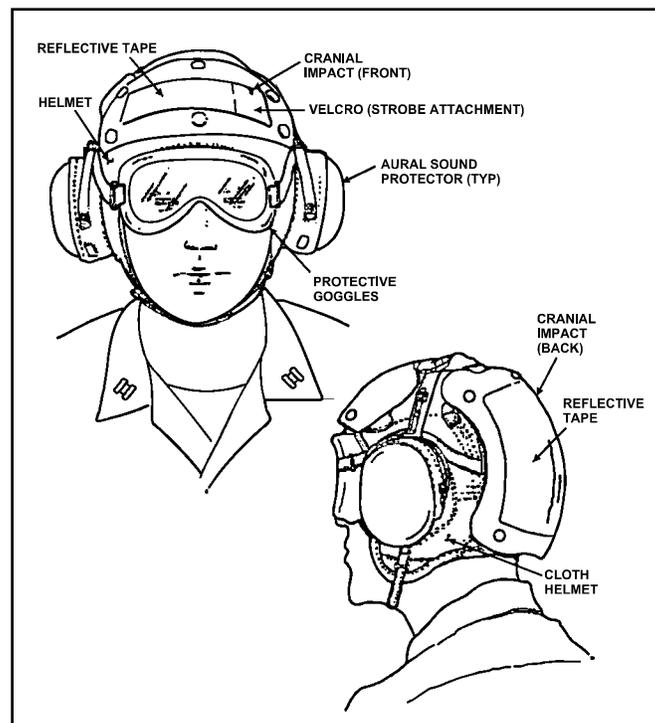


Figure 5-40. Cranial Assembly

## 5.4.2 Life Preservers

### Note

- A preflight inspection shall be performed on all personal life preservers prior to each flight by the aircrew member to whom the life preserver is assigned.
- A preflight inspection shall be performed on life preservers installed in aircraft prior to each flight by assigned aircrew members.
- Special inspections shall be performed by O-Level (aviator's equipment branch) on all aircraft-installed life preservers at regular intervals as prescribed by the applicable NAVAIR 13-1-6. (series) manual.
- The calendar/phase inspection shall be performed on all life preservers prior to placing in service. The inspection cycle thereafter shall be as follows: personal-issue life preservers shall be inspected at regular intervals as prescribed by the applicable NAVAIR 13-1-6. (series) manual. Aircraft-installed life preserver inspection shall coincide with the inspection cycle of the aircraft in which installed. See applicable planned maintenance system (PMS) publications for specific intervals. In no case shall the interval exceed 231 days. Unless operational requirements demand otherwise, the life preserver calendar/phase inspection shall be performed by the intermediate level of maintenance, or above.

### Note

The functional test shall be performed prior to placing in service, every fourth inspection cycle thereafter, and whenever an inflation assembly is replaced. The leakage test shall be performed during every inspection cycle.

### 5.4.2.1 LPP-1/1A Life Preserver

The LPP-1/1A life preserver (Figure 5-41) is a single-compartment, yoke-type flotation assembly that weighs approximately 3 pounds and provides a minimum buoyancy of 29 pounds when inflated. Prior to inflation, the preserver is contained in a pouch strapped around the survivor's waist by an adjustable webbed nylon belt. When removed from the storage pouch, the deflated preserver is placed over the survivor's head and inflated through either an oral inflation tube or a carbon dioxide cylinder/inflation valve. The CO<sup>2</sup> inflation valve assembly is triggered by a lanyard and toggle at the base of the preserver; the oral inflation tube is located in the upper portion of the preserver, easily accessible to the survivor. Also attached to the preserver are several survival items, including a survival location light with attachment near the right shoulder, a whistle below the oral inflation tube, a sea dye marker inside the pouch, and a lifeline and toggle contained in the belt assembly. When not in use the LPP-1/1A is stored in a storage container with instructions printed on it. See Figure 5-42 for donning procedures.

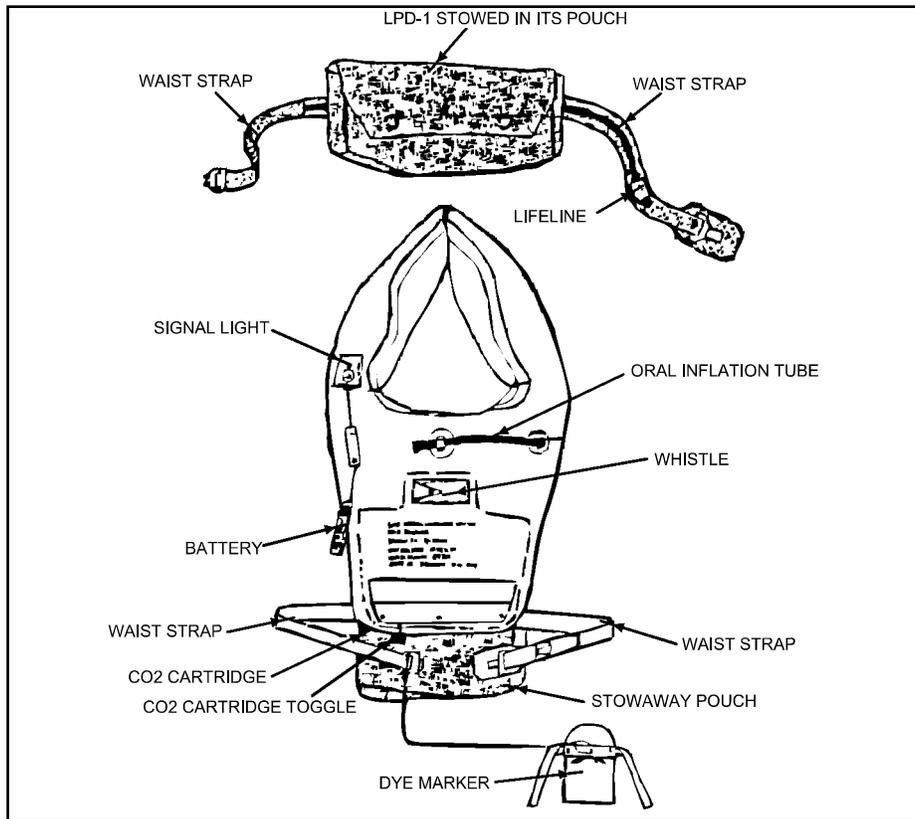


Figure 5-41. LPP-1/1A Life Preserver

**DONNING INSTRUCTIONS FOR LPP-1, -1A LIFE PRESERVERS**

1. REMOVE PRESERVER FROM STORAGE CONTAINER.
2. FASTEN BELT ADAPTERS IN FRONT WITH POUCH IN REAR.
3. ADJUST BELT TO SIZE. SECURE EXCESS BELT BY MATING HOOK AND PILE TAPE.
4. ROTATE POUCH TO FRONT AND READJUST BELT.
5. OPEN SNAP FASTENERS ON POUCH AND UNFOLD LIFE PRESERVER.
6. PLACE DEFLATED PRESERVER OVERHEAD.
7. PLACE THIS STORAGE CONTAINER INTO POUCH AFTER DONNING LIFE PRESERVER.
8. LIFT LOWER END OF PRESERVER OUT OF POUCH.
9. INFLATE PRESERVER BY PULLING TOGGLE DOWN.

Figure 5-42. LPP-1/1A Life Preserver Donning Procedures

#### 5.4.2.2 LPU-32/P Life Preserver Assembly



- The LPU-32/P life preserver is not suitable for, and shall not be used by, small children in naval aircraft.
- The LPU-32/P life preserver assembly is authorized for use by passengers and troops in helicopter or transport type aircraft for sea-survival situations. It is designed such that one size fits all.
- The LPU-32/P life preserver assembly consists of a life preserver yoke assembly in addition to three survival items: a sea-dye marker, a whistle, and a chemical light, each of which must be ordered separately to make up the complete system. The LPU-32/P life preserver assembly weighs approximately 4 pounds and provides a minimum of 40 pounds of buoyancy. It consists of flotation assembly, two inflators, and a casing cover assembly, which includes the belt assembly and the survival items pouch.
- The dual-cell, yoke-type flotation assembly is constructed of a heat-sealed polyurethane-coated nylon cloth. A fire-retardant, aramid cloth (MIL-C- 83429, Type II, Sage Green # 1590) casing protects the bladder. It is equipped with an oral inflation tube, a check valve, and a manifold stem assembly. The waist belt assembly consists of an adjustable belt made of nylon webbing, a nylon slide (looploc), a triglide, and side release.

#### Note

- As LPU-32/P life preservers (Figure 5-43) become available, they shall replace the LPP-1/1A by attrition. See Figure 5-44 for donning procedures.
- The NA 13-1-6.1-2 authorizes a 12-inch locally manufactured extension Belt for the LPU-32/P Waist Belt for use with winter garments, battle dressed troops, or larger passengers.

#### 5.4.2.3 LPU-31/P Life Preserver Assembly

#### Note

- The LPU-31/P life preserver assembly (Figure 5-45) is authorized for use by helicopter combatant aircrew using the T-65 body armor.
- The LPU-31/P life preserver assembly weighs approximately 4 pounds and provides a minimum of 29 pounds of buoyancy. The LPU-31/P life preserver is composed of the LPP-1/-1A life preserver and a protective bladder cover.
- The flotation assembly of the LPU-31/P is constructed of polychloroprene-coated nylon cloth. It is equipped with an oral inflation valve, a valve stem, and an inspection record patch. The belt consists of a 53-inch piece of webbing, an adjustable buckle and clasp, a toggle assembly, and a toggle assembly pocket. The belt adjusts from a waist size of 30 to 52 inches and attaches the flotation assembly to the wearer by means of the belt loop on the flotation assembly. The toggle assembly consists of a

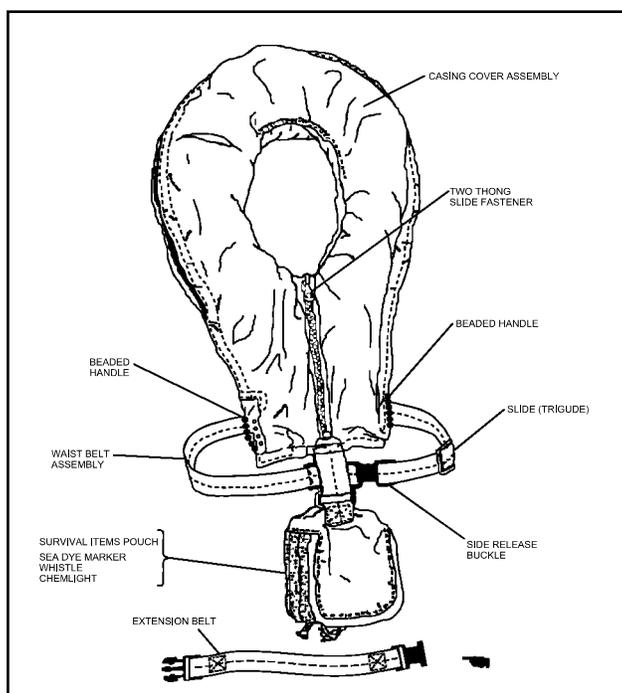


Figure 5-43. LPU-32/P Life Preserver Assembly

wooden toggle and line, and is used to secure survivors together while they are in the water. When not in use, the toggle line is wrapped around the wooden toggle and stowed in a pocket located on the belt. See Figure 5-46 for donning procedures.

### 5.4.3 Regular Standard, Right Angle, 2-Cell Flashlight

#### Note

- For NVG compatibility, the flashlight may be used with a blue indicator light filter (NIIN 01-369-1658).
- Maintenance of the regular standard, right-angle, 2-cell flashlight is limited to inspection.

The regular standard, right-angle, 2-cell flashlight is a battery-operated flashlight that emits white, red, and diffused light and is intended for general use. The regular standard, right-angle, 2-cell flashlight consists of a filter cap; lens; reflector; lamp holder; belt clip; battery case; switch; rear-spring contact; battery retainer (end cap); spare lamp holder with lamp; lens storage area in end cap, which contains diffused (1), blackout (1), and red filters (3); and a suspension ring located on the bottom of the end cap. The flashlight is powered by two commercial, size D, dry-cell batteries. The regular standard, right-angle, 2-cell flashlight is intended for general use. The flashlight is operated by a push slide-type switch, mounted on the side of the flashlight case. The switch provides a locked OFF, FLASHING, and positive ON position and can be operated with one hand.

The filters can be changed (depending on the application) by means of unscrewing the filter cap, installing the filter in front of the lens, then screwing the filter cap back onto the front of the flashlight. If the lamp requires changing, a spare is located in a holder located in the battery retainer.

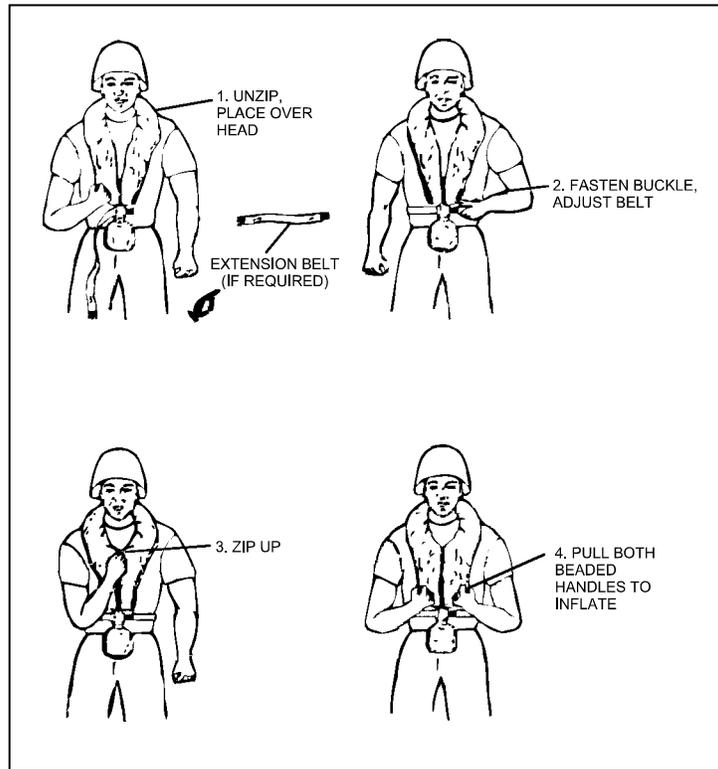


Figure 5-44. LPU-32/P Life Preserver Assembly Donning Procedures

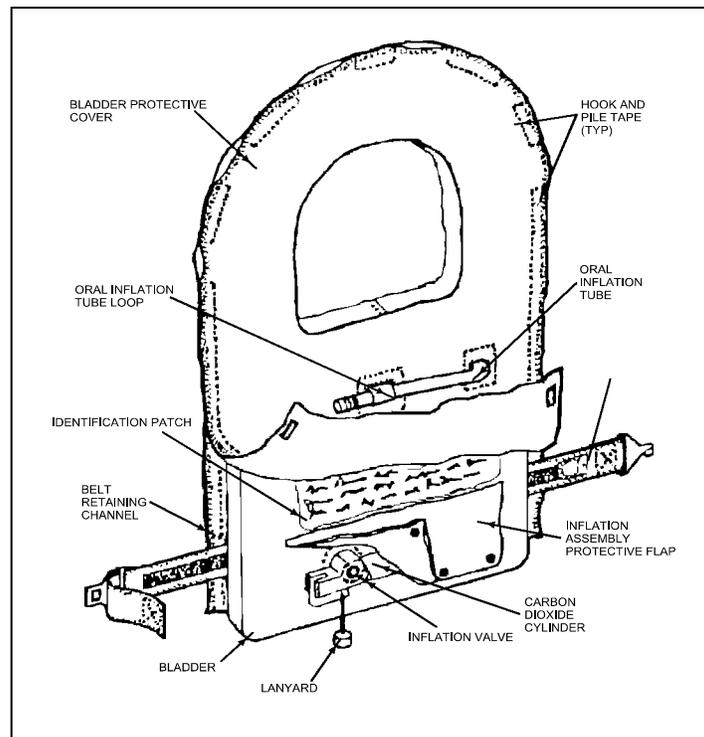


Figure 5-45. LPU-31/P Life Preserver Assembly

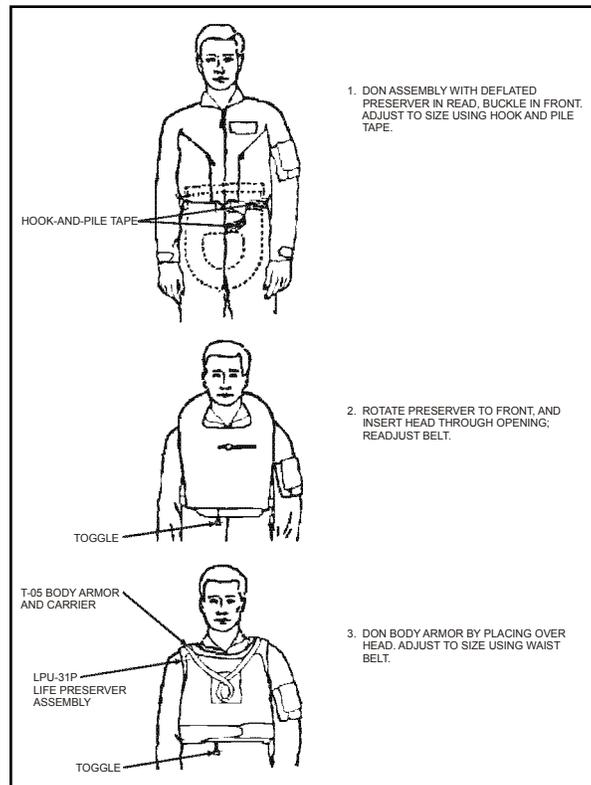


Figure 5-46. LPU-31/P Life Preserver Assembly Donning Procedures

#### 5.4.4 Tubular Nylon Webbing Flat Rope (Figure 5-47)

The webbing (Figure 5-47) as ordered is 150 feet long and must be cut to the desired length. The webbing is used as a self-equalizing four-point anchor to which a separate rappel line can be attached. Description and uses of the self-equalizing four-point anchor are covered in Chapter 4 (Inland SAR Procedures).

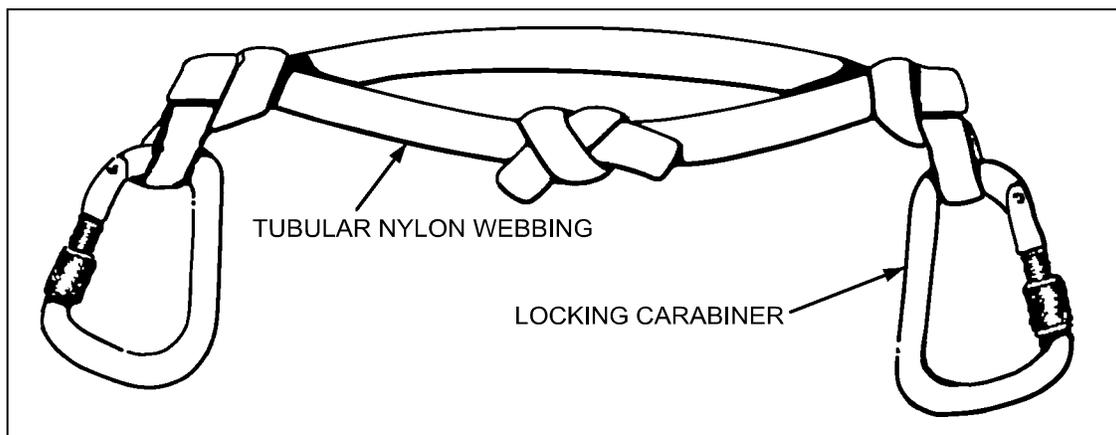


Figure 5-47. Tubular Nylon Webbing



Failure to comply with limited service requirements could be hazardous to personnel. The tubular nylon strap shall be removed from service and discarded under the following conditions: 24 months have elapsed from the date placed in service or if contaminated by any of the following: acetic acid, hydrochloric acid, muriatic acid, nitric acid, nitrobenzene, oxalic acid, phenol, or sulfuric acid.

**Note**

- Maintenance operations shall be performed by organizational level or above.
- Maintenance of the nylon strap is limited to visual inspection, replacement, and cleaning. Excessively dirty nylon strap may be laundered in cool water using a mild detergent (MIL-D-16791), and hung to air dry.
- Nylon straps shall be inspected prior to being placed in service and at least every 90 days thereafter.

**5.4.5 Entrenching Tool**

**Note**

- Maintenance is limited to inspection.
- The telescoping shovel shall be inspected upon initial issue, and at least every 180 days thereafter, or at intervals to coincide with the inspection schedule of the survival kit or assembly in which the shovel is stored.

The entrenching tool (shovel) is used to dig at crash sites, put out fires, or make survival shelters. The telescoping shovel blade and shaft are constructed from aluminum alloy. The shaft of the shovel telescopes from 14 inches to 22 inches using two shaft pieces. The hollow shaft allows for a lighter tool. The shovel also has a D-shaped durable plastic handle. The blade is 10 inches wide x 11 inches long.

**5.5 RAPPELLING EQUIPMENT**

**Note**

- Maintenance operations of all rappelling equipment shall be performed by organizational level, or above.
- Maintenance of rappelling equipment is limited to visual inspection, cleaning, and replacement.

**Note**

Special inspections shall be performed on all rappelling equipment at time of place in service, and at regular intervals as prescribed by the applicable NAVAIR 13-1-6.5 manual.

The rappelling equipment is used to descend from the aircraft to the ground. This equipment has advantages over the hoist because of an increase in speed, reliability, accuracy, safety, and simplicity, as descent is entirely controlled by the rappeller. Descents may be made into difficult-to-reach areas from heights exceeding hoist cable lengths.

**5.5.1 L-4-250/L-4-150 Sky Genie Descent Systems**

Two Sky Genie descent systems (Figure 5-48) are used in rappelling. The L-4-250 system has a 250-foot-long rope, while the L-4-150 rope is 150 feet long. Each system includes the rope, a control unit used to control the rate of descent, two locking carabiners, and a storage bag.

**5.5.2 Rappelling Rope**

There are two rappelling ropes (Figure 5-48) with separate container bags. The two ropes (150-foot and 250-foot) have swaged loops, natural elasticity, and natural lubricant. Each rappelling rope has its own serial number and a record is maintained of date placed in service and number of rappels performed.



Failure to comply with the below safety criteria could be hazardous to personnel. Rappelling ropes shall be removed from service and discarded under the following conditions (Reference NAVAIR 13-1-6.5 manual):

1. After 200 rappels, or 24 months from date placed in service
2. If used to arrest a free fall of 2 feet or more

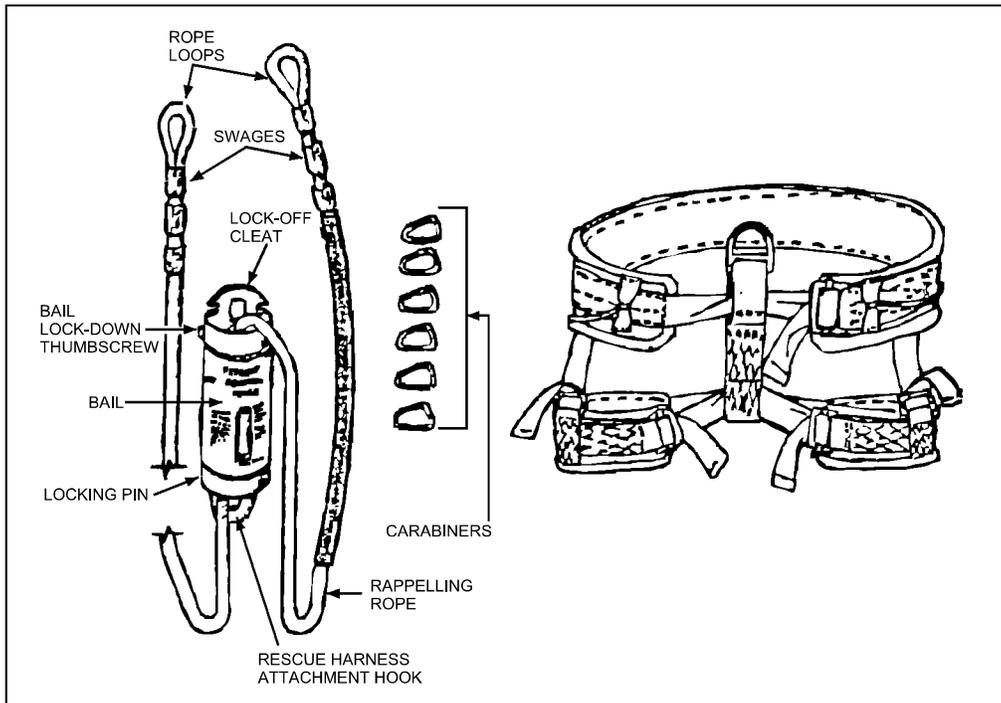


Figure 5-48. L-4-150/L-4-250 Descent System and Rappel Harness

## NTTP 3-50.1

3. If rope has been used two times for rapid descent at speeds in excess of 15 feet per second
4. If contaminated by any of the following: acetic acid, hydrochloric acid, muriatic acid, nitric acid, nitrobenzene, oxalic acid, phenol, or sulfuric acid.

### Note

Excessively dirty rope may be laundered in cool water using a mild detergent (MIL-D-16791), and hung to air dry.

### 5.5.3 Rappel Harness

The basic rappel harness (Figure 5-48) is a replacement for the Sky Genie harness. The harness consists of an adjustable padded waist strap, attached by 1-3/4-inch webbing straps to two adjustable padded leg loops. The front lifting D-Ring is proof loaded to 5,000 lbf with average ultimate tensile strength of 16,000 lbf each and incorporated for attaching the descent/belay/ascent devices. All 1-3/4-inch webbing has 7,000 lbf minimum breaking strength, and 3-inch webbing has 9,000 lbf minimum breaking strength. Each rappel harness shall be serialized. It is available in five sizes.

### 5.5.4 Carabiner



#### WARNING

- If any defects are noted, replace prior to placing in service.
- Ensure that all carabiners are free of oil, fuel, and grease prior to use. Never lubricate the gate, gate-locking sleeve (locking type only), or gate pin.

Carabiners are oblong metal rings of various types normally used for rappelling and tree extraction, as discussed in Chapter 4. Carabiners have different weight limitations depending on the type of metal and construction used. There are two basic types of carabiners in use: the standard nonlocking carabiner (NIIN01-322-7433), and standard locking carabiner (STUBAI SG #85) (NIIN 01-322-7432), which are available through the supply system.

#### 5.5.4.1 The Standard Nonlocking Carabiner



#### WARNING

- The standard nonlocking carabiner (NIIN01-322-7433) (Figure 5-49) should be used in tandem with the gates on opposite sides.
- All nonlocking carabiners shall be color-coded red to identify them as being nonlocking.
- The standard nonlocking carabiner shall never be used as an attachment to hoist personnel. Nonlocking carabiners are used on equipment only.

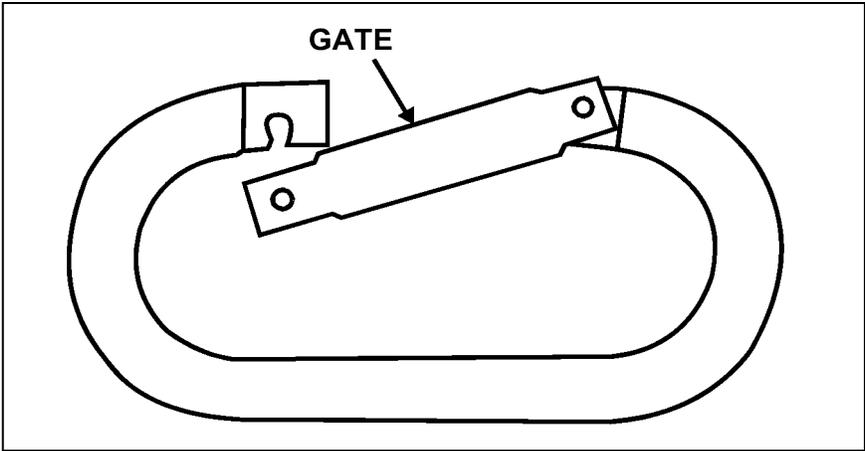


Figure 5-49. Standard Nonlocking Carabiner

**5.5.4.2 Standard Locking Carabiner**

The standard locking carabiner (Figure 5-50) has the safety feature of a lockdown thumbscrew. The thumbscrew rotates around the gated portion of the carabiner and keeps the gate from accidentally opening. These carabiners are made of steel or aluminum and provide the maximum safety.

**5.5.5 Portable Oxygen System**

The 106-cubic-inch portable oxygen system consists of a compressed gaseous oxygen twin bottle, AIROX VII regulator, and modified MBU17V2/P mask. The system will provide continuous oxygen flow for periods of up to 45 minutes, dependent upon conditions. The system is compact (22.5" long x 13" wide x 6.5" high) and weighs 8-1/2 pounds. It is compatible with the standard helicopter helmet.

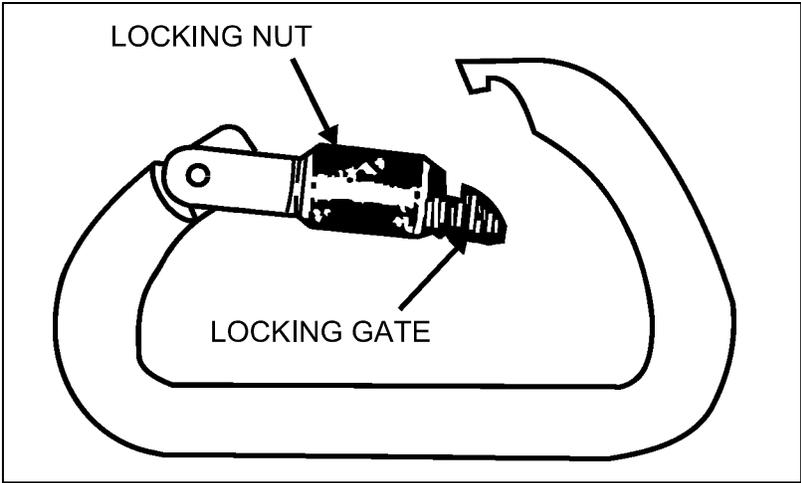


Figure 5-50. Standard Locking Carabiner

### 5.5.6 Waist Belt

A waist belt may be manufactured locally by using any suitable material to attach the bag on the waist. The waist belt is then attached to the rappel bag utilizing the straps on the back of the bag. The rappeller places this around the waist with the rope bag worn on the lower back.

### 5.5.7 Spring-Loaded Belay Plate

#### Note

If belay plate is contaminated with any foreign substance, clean with isopropyl alcohol and wipe dry with clean lint free cloth.

The spring-loaded belay plate (Figure 5-51) is attached to a stationary object, and is used as a braking device for lowering the survivor. The spring-loaded belay plate is an aluminum disk with two center slots, which accommodate both 9-mm and 11-mm ropes.

## 5.6 TREE EXTRICATION EQUIPMENT

This equipment is used in rescue operations involving the removal of a survivor from a tree. The equipment consists of climber's spikes, rappel rope, belay line, Rescue "8", spring-loaded belay plate, tree- or pole-climber's belt, and a belt or strap. The use of this gear is discussed in Chapter 4.

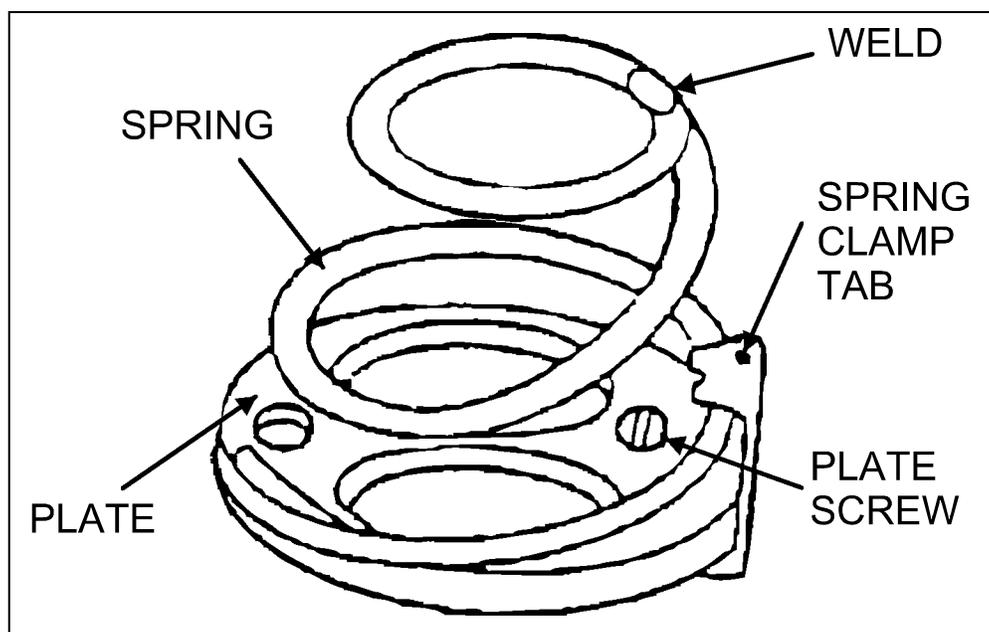


Figure 5-51. Spring-Loaded Belay Plate

### 5.6.1 Climber's Spikes

#### Note

For cleaning, use a water-dampened cloth. Wipe area clean, and air dry. To sharpen and/or remove burrs from spike points, use a medium file.

These very sharp, extra-long climber's spikes (Figure 5-52) are the devices used in actual climbs for tree extrication (pole spikes are too short). Climber's spikes are very dangerous if not used properly. A great deal of training and experience is necessary to ensure skillful use.

### 5.6.2 Belay Line

The belay line (Figure 5-53) is used to lower the survivor from the tree. The use of the rope is discussed in Chapter 4. The belay system was developed as a backup system for overland rescue hoists, and cliff rescues. The Kernmantle line is an 11-mm rope of sufficient length for any hoisting evolution.

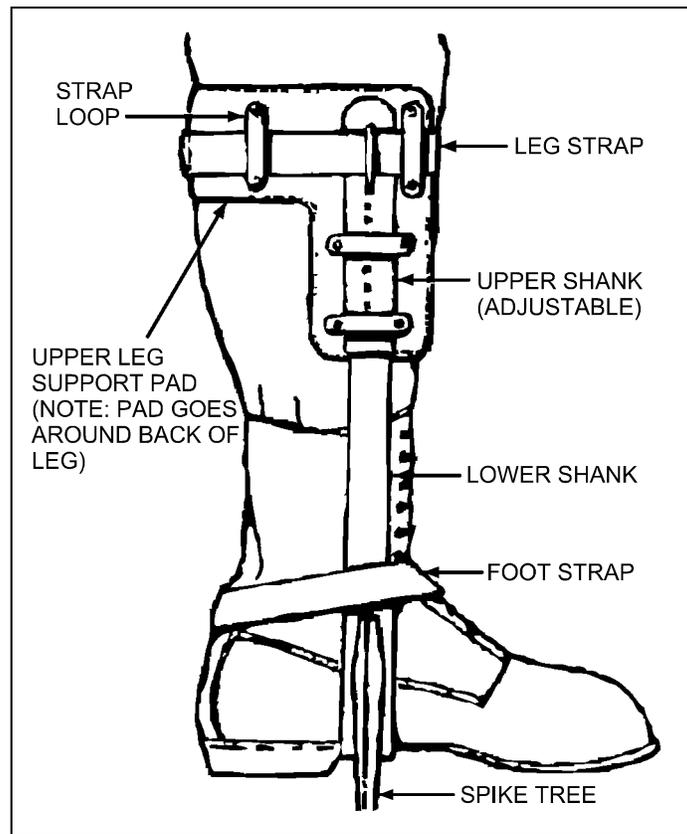


Figure 5-52. Climber's Spike

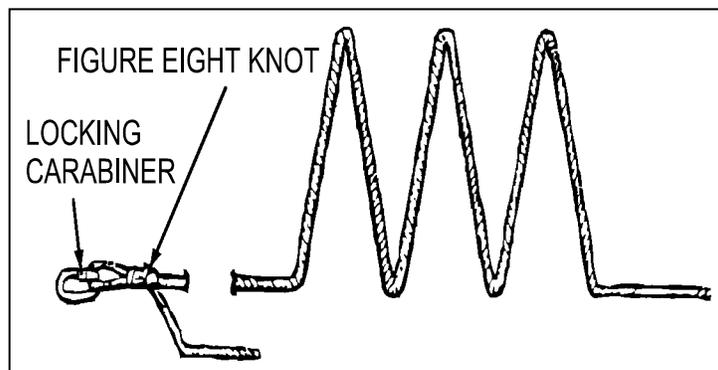


Figure 5-53. Belay Line



**WARNING**

Failure to comply with the below safety criteria could be hazardous to personnel. Rappelling ropes shall be removed from service and discarded under the following conditions:

1. After an actual arrestment
2. After 18 months from place in service date
3. If contaminated by any of the following: acetic acid, hydrochloric acid, muriatic acid, nitric acid, nitrobenzene, oxalic acid, phenol, or sulfuric acid.

**Note**

The container bag may be repaired. Dirty ropes and container bags may be laundered in cool water with a mild detergent (MIL-D-16791), and hung to air dry.

**5.6.3 Rescue “8”**

The Rescue “8” (Figure 5-54) is attached to a stationary object and is used as a braking device for lowering the survivor.

**5.6.4 RA/SMC Rescue Pulleys, P/Ns 315000 and 315500**

The RA/SMC rescue pulleys (P/Ns 315000 and 315500) (Figure 5-55) are used in conjunction with rappel/belay rigging equipment for overland rescue operations. They have stainless steel side plates that rotate, allowing the pulley to be attached to the rope at any point. The axle nuts are double locked to a steel axle and marked with a blue witness line to indicate any loosening. The heavy-duty, heat-treated aluminum alloy wheels make them lightweight and durable.

The single pulley system, P/N 315000, is 2 inches in size and weighs 8.6 oz. It has a tread diameter of 1 1/2 inches, a 1/2-inch rope capacity and a maximum load-bearing capacity of 6,000 lbs. The double pulley system, P/N 315500, is 2 inches in size and weighs 1 lb., 7.7 oz. It has a tread diameter of 1 1/2 inches, a 1/2-inch rope capacity and maximum load-bearing capacity of 9,000 lbs.

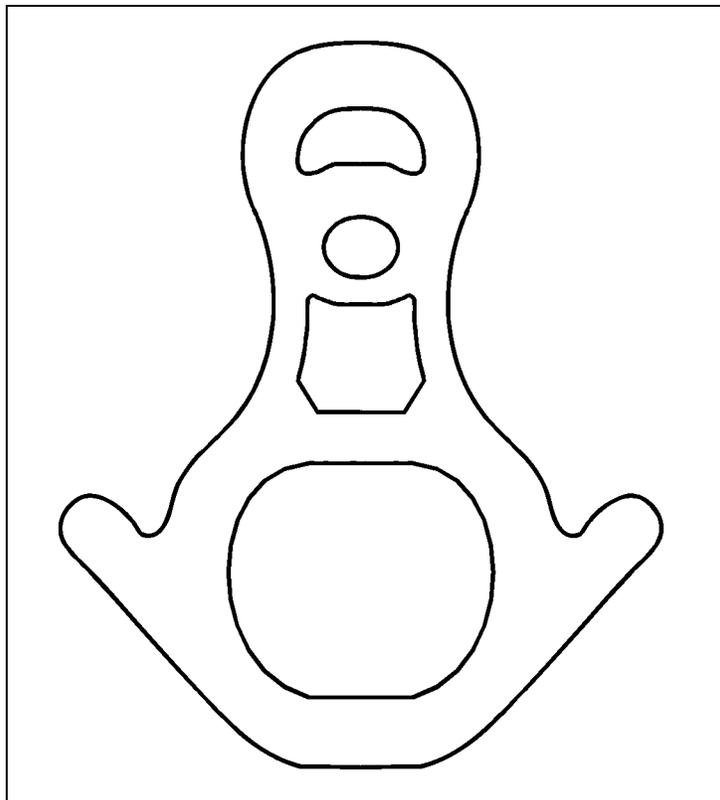


Figure 5-54. Rescue "8"

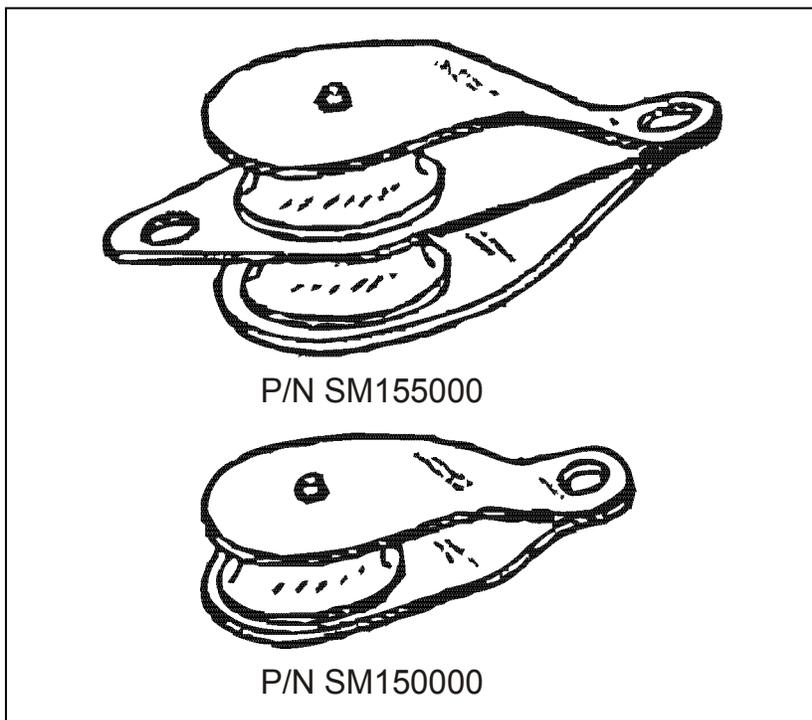


Figure 5-55. RA/SMC Rescue Pulleys

**Note**

The pulley's bushings and ball bearings are permanently lubricated. No lubrication is required. No disassembly of pulleys is authorized.

**5.6.5 Climber's Belt and Strap**

The climber's belt with strap is (Figure 5-56) the device the RA uses to secure him/herself to the tree for the climb during operations involving the removal of a survivor from a tree. The RA wears the belt around his waist, and the strap is wrapped around the tree and attached to both sides of his belt.

**5.7 SURVIVOR POSITION-MARKING DEVICES**

Pyrotechnic devices should not be used in areas where flammable fluids or other combustible materials may be ignited. These marking devices are used for marking positions or determining wind direction. Pyrotechnics should be stored in a dry, well-ventilated magazine out of the direct rays of the sun and protected against excessive or variable temperatures.



- Smoke markers are very dangerous and shall be used IAW NAVAIR 11-15-7.
- Damaged markers shall not be used. Segregate damaged markers for appropriate disposition IAW Chapter 3 of NAVAIR 11-15-7.
- If at any time the aircraft has an emergency, and the marker is armed, either: Immediately resafe the marker (if possible), or discard immediately.
- Do not stow armed markers in the helicopter, armed markers that cannot be resafed shall be disposed of IAW local instructions.

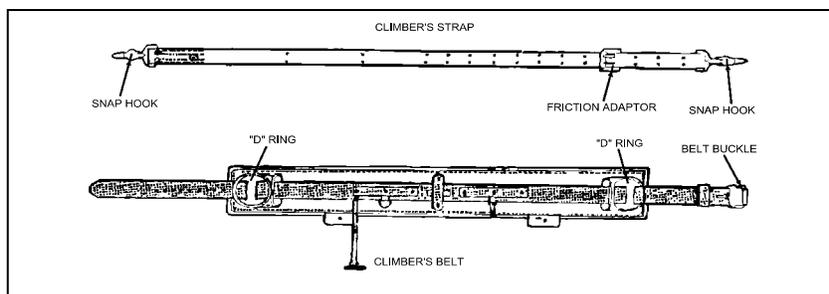


Figure 5-56. Climber's Belt with Strap



A flashing marker light may cause vertigo, especially at night.

**Note**

- Shipboard personnel should not utilize chemical lights in attempting to mark survivor's position. Multiple chemical lights in the water are distracting to the rescue crews, and may hamper the search efforts by presenting numerous false targets to helicopter crews and/or shipboard search teams.
- Marker deployment procedures can be found in Chapter 1.

### 5.7.1 MK 25 Smoke, Marine Marker

This device (Figure 5-57) is designed to be launched or thrown from aircraft or surface vessels to provide either day or night reference points to the position of survivors. This device has a 10- to 20-minute burning time. For freshwater use, refer to NAVAIR 11-15-7.



The MK 25 shall not be launched while in hover because of valve plug possibly striking aircraft or personnel.

**Note**

Both the protective cap and arming cap should be kept until marker is deployed. If marker is not deployed, resafe the marker.

### 5.7.2 MK 58 Smoke, Marine Marker

This device (Figure 5-58) is designed for day or night use in any condition calling for a long-burning (at least 45 minutes) smoke reference point on the ocean surface. This flare can be launched by hand (refer to NAVAIR 11-15-7 for more information).

### 5.7.3 MK 18 Smoke, Land Marker

This device (Figure 5-59) is the only pyrotechnic designed for use over land. It may be used in many applications for signaling on the ground or from an aircraft as a marking device or for wind determination. This device has a burn time of 50 to 90 seconds.

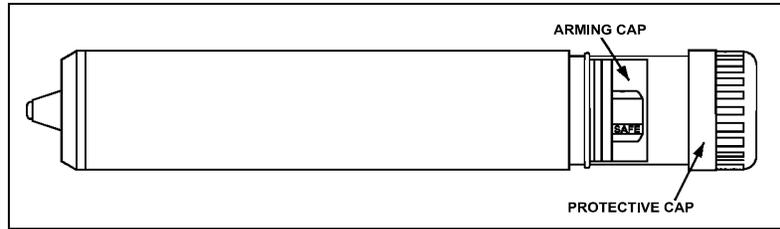


Figure 5-57. MK 25 Smoke, Marine Marker

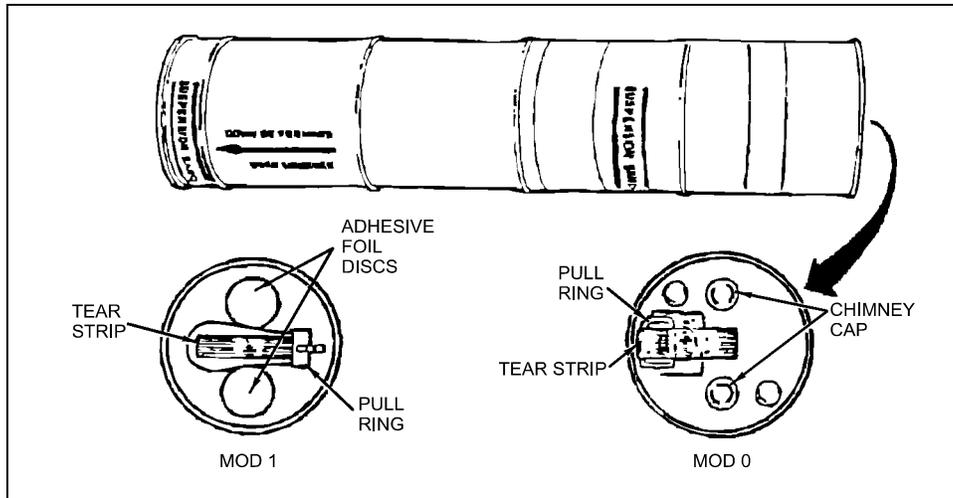


Figure 5-58. MK 58 Smoke, Marine Marker

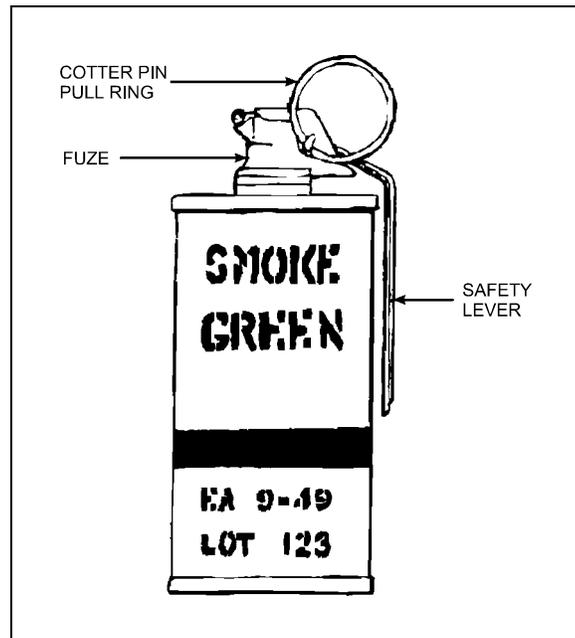


Figure 5-59. MK 18 Smoke, Land Marker

**5.7.4 Datum Marker Buoy**

These buoys (Figure 5-60) are specially designed, droppable, floating beacons, which transmit on radio frequencies. Once the buoy is dropped, it will become a drifting datum point and navigational aid for search aircraft. The datum marker buoy (DMB) provides an excellent means of measuring total water current. The total water current is the sum of the wind, sea, and other currents. The actual total water current is an essential item of information in search planning.

**5.7.5 SDU-36/N Electric Marine Marker Light**

The electric marine marker light (Figure 5-61) is a droppable light, which provides a visual reference to a survivor’s position in the water. The light can be used in fuel spills where there is a possibility of fuel being on the surface. The electric marine marker light is a battery-powered (6-volt battery, P/N BA803/U), 14-inch-long device with an outer case, overhead omni-directional lens, and mounting bracket. The light switch operates by an automatic gravity switch so that when upright (lens pointing up) the light is ON, and when inverted, the light is OFF.

**5.7.6 MK-79 MOD 0 and MK-79 MOD 2 Personnel Distress Signal Kit (Figure 5-62)**



- Dented or damaged flares shall not be used. Dents or other imperfections might result in violent action of the flare when fired and should be discarded in proper manner.
- Flares should not be threaded into launcher under any circumstance, unless being fired. This includes during inspection.

**Note**

Flare-lots, which have been reclassified by a Notice of Ammunition Reclassification (NAR), will only be removed and replaced when directed by an aircrew system bulletin (ACB). If a bandolier is not used, protective plastic caps shall be installed on flares or flares shall be removed from service and stored.

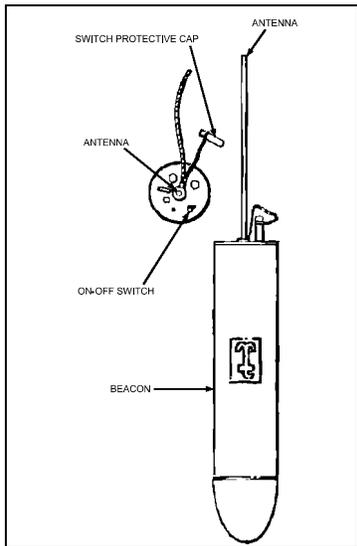


Figure 5-60. Datum Marker Buoy

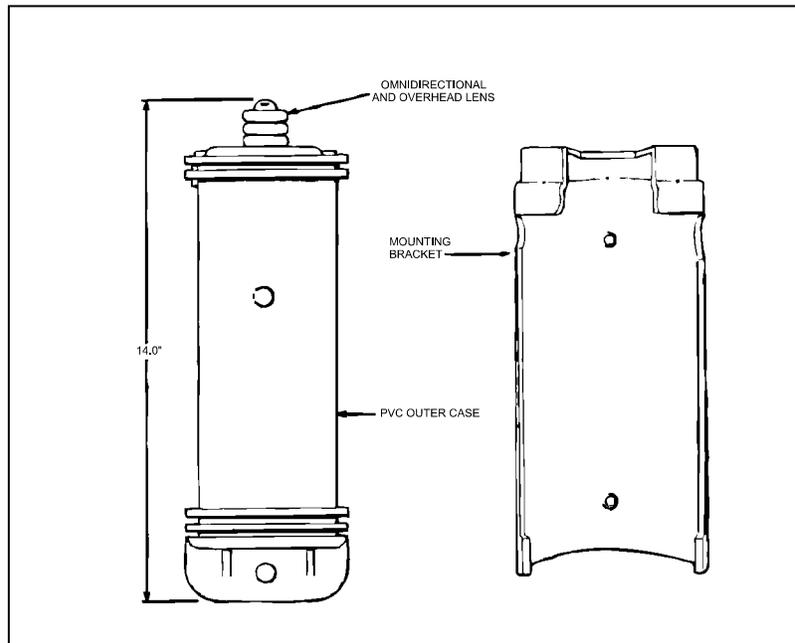


Figure 5-61. SDU-36/N Electric Marine Marker Light

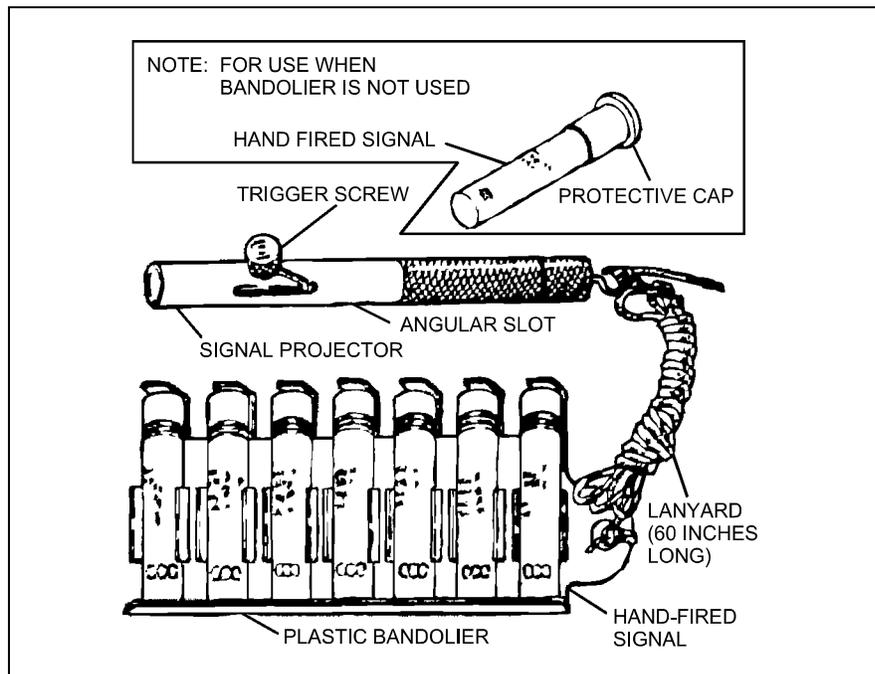


Figure 5-62. MK-79 MOD 0 and MK-79 MOD 2 Personnel Distress Signal Kit

The MK-79 MOD 0 and MK-79 MOD 2 personnel distress signal kits consist of a pencil-type launcher and cartridge flare used to attract attention of rescue parties or aircraft by launching cartridge flares into the air. Each cartridge flare has a burn-duration of 4 1/2 seconds minimum, and is propelled upward to a height of 250–650 feet.

**Note**

- The MK-79 MOD 2 (NIIN 01-230-3974) is an alternate to the MK-79 MOD 0 (NIIN00-866-9788) personnel distress signal kit.
- The MK-79 MOD 0 (NIIN 00-866-9788) and MK-79 MOD 2 (NIIN 01-230-3974) personnel distress signal kits consist of one signal projector MK-31 MOD 0 (NIIN 01-123-4745) and a plastic bandolier holding seven screw-in signal cartridges MK-80 MOD 0 (NIIN 00-930-7746) or MK-80 MOD 2 (NIIN01-216-3243). The plastic bandolier, which stores the signals until use, has plastic tabs over the signal end to protect the signal percussion primers from being struck accidentally. If the plastic bandolier is not used to store the signals, protective caps (MS90376-8Y) shall be used to protect the signal percussion primers.

**5.7.7 MK-124 MOD 0 Marine Smoke and Illumination Signal**

The MK-124 MOD 0 Marine Smoke and Illumination Signal (Figure 5-63) is intended for either day or night signaling by aircraft personnel downed at sea or land. The signal is a one-hand-operable device, intended for rescue use. Its small size and weight permits it to be carried in life vest or flight suit pockets and on life rafts. The signal is listed under DL 3139734, Specification WS 13697, NIIN 01-030-8330, and DOD Code No.L283 The MK-124 MOD 0 signal is intended to attract the attention of SAR aircraft and to give wind drift direction. The ignited MK-124 MOD 0 signal must be held at arms length at a 45° angle from the horizontal position. If the signal is being used at sea, hold it over the side of the life raft to prevent damage to the life raft from hot residue.

The MK-124 MOD 0 signal consists of an aluminum case slightly over 5 inches long and 1 1/2 inches in diameter. Each end of the signal is provided with a protective cap. The case has two raised bead circles around its circumference on the flare (night) end to facilitate identification in darkness. On the outside of the MK-124 MOD 0 are operating instructions and further identification of smoke (day) and flare (night) ends. The case contains four subassemblies: smoke candle, smoke igniter, flare candle, and flare igniter. The igniter is one-hand-operable. It consists of an arming lever that must be extended to the armed position and then depressed to cock and release the firing pin. The signal emits an orange smoke or red flare for approximately 20 seconds.

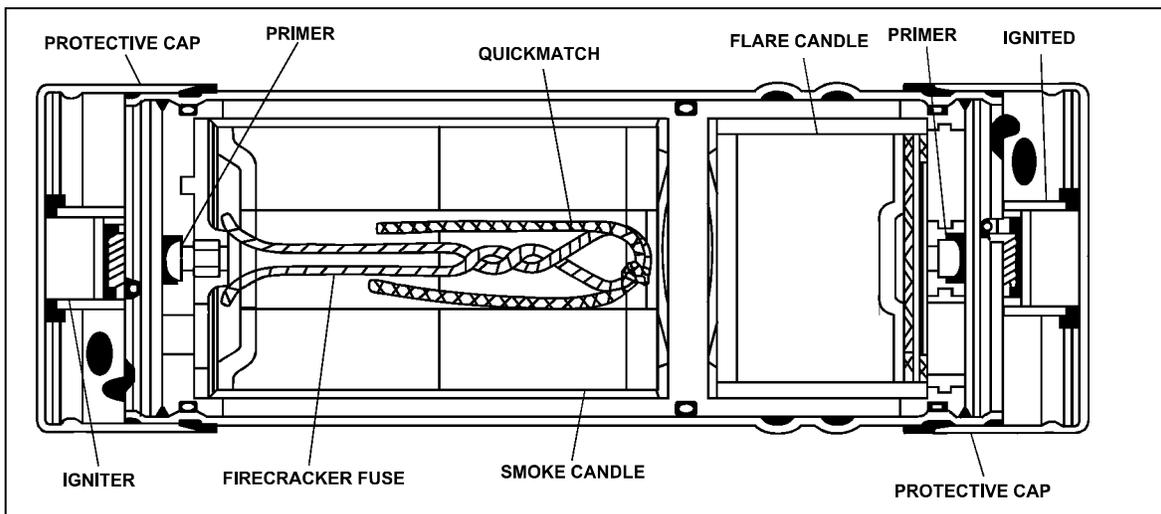


Figure 5-63. MK 124 MOD 0 Marine Smoke and Illumination Signal

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### **5.7.8 AN/SSQ-57B SAR Buoy**

The AN/SSQ-83 SAR buoy has been replaced with channel 15 of the AN/SSQ-57B sonobuoy in P-3 aircraft. See NAVAIR 28-SSQ-500-1 for guidance.

### **5.8 AIRCRAFT CREW REQUIREMENTS**

Crew requirements for search and rescue missions shall be IAW appropriate aircraft T/M/S NATOPS Manual.

### **5.9 MINIMUM HELICOPTER SAR EQUIPMENT**

The following is the minimum required SAR equipment to be maintained in the aircraft when conducting any SAR mission (unless otherwise noted):

#### **Note**

- A DRH and rescue strop should be carried in all aircraft with rescue hoist installed.
- Level “B” medical kits and SAR medical oxygen system are to be maintained by commands utilizing SAR corpsmen (NEC 8401) only.
- Minimum requirements may be added to, but never subtracted from, at the commanding officer’s discretion.

1. DRH
2. Rescue strop
3. One (1) hoist quick splice plate
4. One (1) cable grip with its own crewman’s safety belt
5. One (1) rescue hand tool (pneumatic or manual webbing/cable cutter)
6. Crewman’s safety belts: number as required by individual T/M/S aircraft NATOPS manuals
7. Six (6) general-purpose, and (6) six high-intensity chemical lights
8. Three (3) chemical light straps
9. One pair of heavy-duty hoisting gloves
10. Three (3) additional cranial assemblies
11. Two (2) wool blankets
12. One (1) helicopter rescue equipment bag
13. One (1) trail line assembly
14. One (1) rescue litter sling assembly (2 pieces)

15. One (1) Level “A” medical kit
16. One (1) rescue litter or SAR MEDEVAC litter assembly
17. One (1) Level “B” medical kit (SAR corpsmen use only)
18. One (1) SAR medical oxygen system (SAR corpsmen use only)

### 5.9.1 Additional Required SAR Equipment for Over Water

The following is the minimum required SAR equipment to be maintained in the aircraft when conducting any overwater SAR mission, including plane guard (unless noted otherwise).

#### Note

- A total of six (6) MK-58 flares may be substituted for items 1 and 2.
- Refer to Chapters 1 and 3 for overwater SAR procedures.
- Minimum requirements may be added to, but never subtracted from, at the commanding officer’s discretion.

1. Two (2) MK-58 smoke flares
2. Four (4) MK-25 smoke flares
3. Three (3) electrical marine marker lights
4. One (1) electronic datum-marking device (when available)
5. Three (3) LPP-1/1A, or three (3) LPU-32/P, preservers
6. One (1) MPLR weak link per MPLR carried.

### 5.9.2 Additional Required SAR Equipment for Over Land (for Commands with HIRA-Qualified Rescue Aircrewmembers Only)

The following is the minimum required SAR equipment to be maintained in the aircraft with helicopter inland rescue aircrewman (HIRA)-qualified rescue aircrewmembers aboard, when conducting any overland SAR mission.

#### Note

- Refer to Chapters 1 and 4 for overland SAR procedures.
- Minimum requirements may be added to, but never subtracted from, at the commanding officer’s discretion.

1. Four (4) MK-18 smoke flares
2. Three (3) crewman’s safety belts
3. One (1) shovel (entrenching tool)
4. Four (4) nylon straps or flat rope (cut to desired length)

## **NTTP 3-50.1**

5. Two (2) flashlights (survival vest flashlights can be counted)
6. One (1) V-bladed rescue knife
7. One (1) 270-foot belay line
8. One (1) 150-foot rappel rope
9. One (1) 250-foot rappel rope
10. Three (3) Sky Genie descent control devices
11. Fourteen (14) standard locking carabiners
12. One (1) spring-loaded belay plate
13. Three (3) rappel harnesses
14. One (1) hoisting vest
15. One (1) 2-way radio compatible with rescue helicopter.

### **5.9.2.1 Additional Equipment for Overland That Is Optional, But Recommended:**

1. One (1) set of climber's spikes
2. One (1) Rescue "8"
3. One (1) rescue seat
4. One (1) folding survival saw or aircrewmember's survival tool kit
5. One (1) 50-foot roll of tubular nylon webbing
6. A portable, or permanently installed-loudspeaker
7. Mountain boots for each rescue aircrewman
8. High-visibility flight suits for each rescue aircrewman
9. Signaling sleeves for each rescue aircrewman.

### **5.9.2.2 Additional Equipment for Mountainous Terrain That Is Optional, But Recommended:**

The NA 13-1-6.5 has a variety of different survival kits and equipment. Inland SAR commands should tailor additional equipment to the type of environment they operate in with regard to temperature and altitude, keeping in mind the basic needs of an individual stranded in said environment: shelter, water, and food. Some suggestions are:

1. Cold-weather apparel
2. Lightweight extreme cold weather shelter/tents
3. Ultima Thule sleeping bags

4. Ten snow flukes
5. Candles
6. MREs and/or cold-weather rations
7. Portable oxygen system
8. Extra emergency water/water storage bags
9. Snow shoes
10. Climbing gear.

**5.10 FIXED-WING SEARCH AND RESCUE EQUIPMENT**

Fixed-wing aircraft with a search mission should carry a droppable search and rescue kit (Ref. NAVAIR 13-1-6.5).

**5.11 AIRCRAFT MEDICAL EQUIPMENT KITS**

**Note**

Changes to the contents of the Level “A” or Level “B” SAR medical kits by local commands are not authorized.

All units with a SAR mission requirement shall acquire and maintain the appropriate kit or kits for emergency use per the authorized medical allowance list (AMAL) for that command.

Two levels of SAR medical kits (Figure 5-64) have been developed for use by helicopter commands with SAR capability; the Level “A” SAR medical kit is designed for all units that maintain SAR capable helicopters. The Level “B” medical kit is used in conjunction with the Level “A” medical kit for all units that maintain SAR-capable helicopters that may utilize SAR hospital corpsmen (NEC 8401). Chapter 7 contains information on medical procedures. Appendix D contains the list, with stock numbers, of the medical equipment for each kit.

**Note**

- Maintenance operations shall be performed by organizational level, or above.
- Maintenance of the SAR Level A/B SAR medical kit is limited to minor repair, replacement of the container bag, and/or the inspection and replacement of medical items.

**Note**

- Inspection and replacement of medical items in the Level “A” SAR medical kit shall be the responsibility of organizational level maintenance, or above.
- Inspection and replacement of medical items in the Level “B” SAR medical kit shall be the responsibility of SAR corpsman, or qualified medical department personnel. Inspection and repair of the Level “B” container bag is the responsibility of organizational level maintenance, or above.

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- Special inspections shall be performed on the Level A/B SAR medical kit at place-in-service, and at regular intervals as prescribed by the applicable NAVAIR 13-1-6. (series) manual.

### 5.12 MEDICAL OXYGEN SYSTEM

#### Note

Medical oxygen is not for use as supplemental flight oxygen for the aircrew.

The approved oxygen system contains a regulator, volume ventilator, adult cuffed mask, and adult/child airways contained in a rigid case. The system is designed for use with the M-22 (Jumbo) “D” aluminum oxygen cylinder or the standard “D” steel oxygen cylinder. The system is for use by SAR hospital corpsmen (NEC 8401), and qualified medical department personnel only. Ordering information is contained in Appendix D.

### 5.13 SURFACE VESSEL SAR EQUIPMENT

This equipment is required for a shipboard deck recovery. Refer to Appendix D for quantities of each item, and procurement and stock number information. Additional items are used for the rescue boat.

#### Note

Refer to Chapter 2 for amplifying information on shipboard rescue equipment, and procedures.

#### 5.13.1 J-Bar Davits

Refer to Chapter 2 for J-bar davit outfitting and procedures.

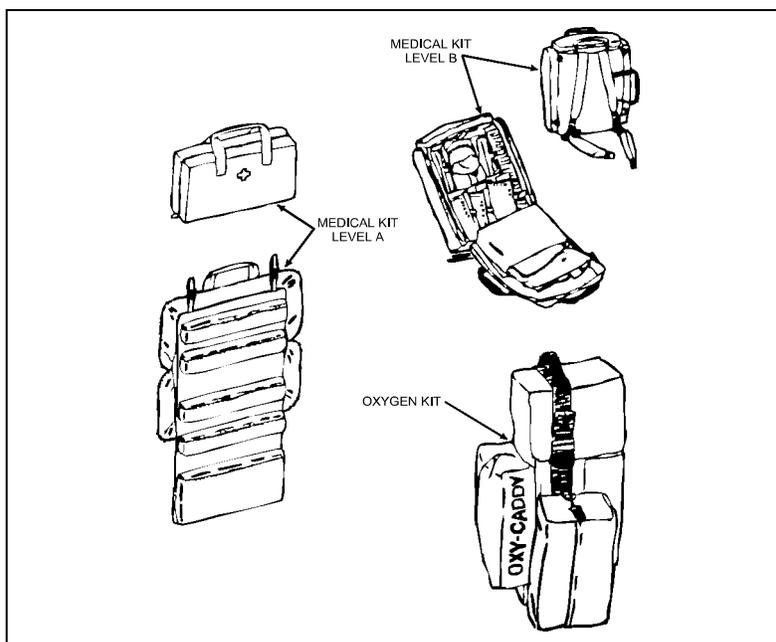


Figure 5-64. Level “A”/“B” Medical Kits and Medical Oxygen System

**5.13.2 Heaving Line**

Heaving lines (Figure 5-65) are made of a floatable, soft, vinyl latex ball attached to a 3/8-inch floating poly line. They are 100 feet long and have an international orange vinyl latex ball attached to the heaving line.

**Note**

One chemical light shall be attached to the end of the ball ring during all night operations.

**5.13.3 Rescue Swimmer Tending Line**

The RS tending line is a 3/4-inch circumference, 800-pound test propylene line with a stainless steel 2-3/8 inch snap hook on one end. The line is reeled on a compact spool.

**5.13.4 V-Bladed Rescue Knife**

The V-Bladed rescue knife (Figure 5-66) is a 10-inch-long x 5-inch-wide device, which consists of a dzus fastener remover on one end, a cutting area that can cut any cloth material up to 1/4-inch thickness, and a handle grip that fits either hand comfortably.

**Note**

There shall be a minimum of one V-Bladed rescue knife on the forecastle and one V-Bladed rescue knife on the rescue boat.

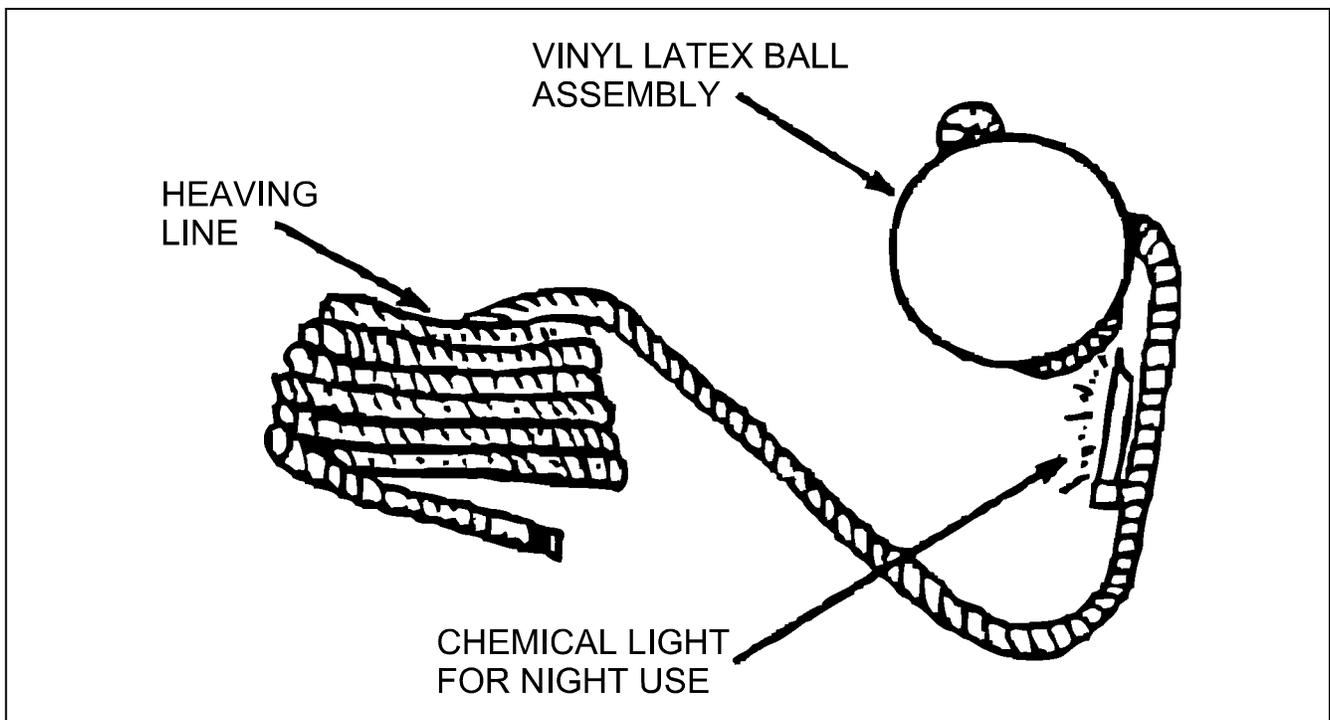


Figure 5-65. Heaving Line with Chemical Light Attached

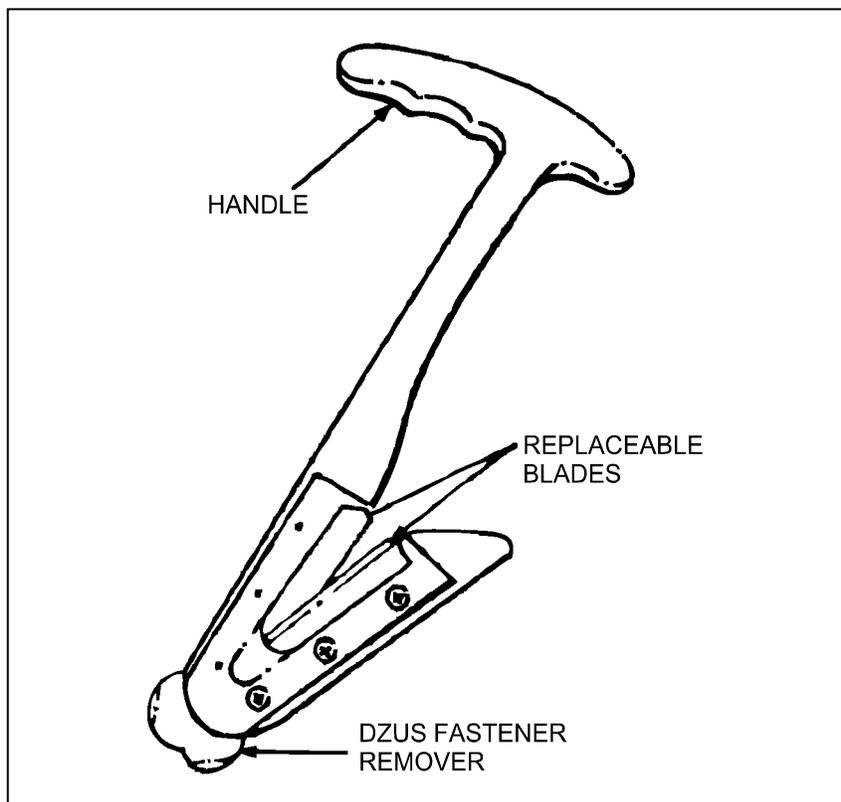


Figure 5-66. V-Bladed Rescue Knife

### 5.13.5 Wool Blanket

Two wool blankets approximately 6 x 8 feet are used for treatment of hypothermia.

### 5.13.6 Grapnel Hook

A grapnel hook (Figure 5-67) is a multiprong steel hook that is used for recovering aircraft parts. It weighs 4 pounds, and is attached to 100 feet of 1-1/2-inch circumference nylon line via a 1/4-inch chain.

#### Note

There shall be a minimum of two grapnel hooks on the forecastle, and two grapnel hooks on the rescue boat.

### 5.13.7 Safety Harness with Dynabrake Shock Absorber

The safety harness (Figure 5-68) is constructed of several straps that crisscross the shoulders, waist, and hips. There is a D-Ring located in the center of the back that protrudes through the buttonhole in the rear of the lifejacket. One end of the dynabrake shock absorber (a length of rope that lengthens when shock pressure on the rope increases) attaches to the D-Ring on the back, and the other end is secured to the ship. The individual handling the J-bar davit uses this harness for safety purposes.

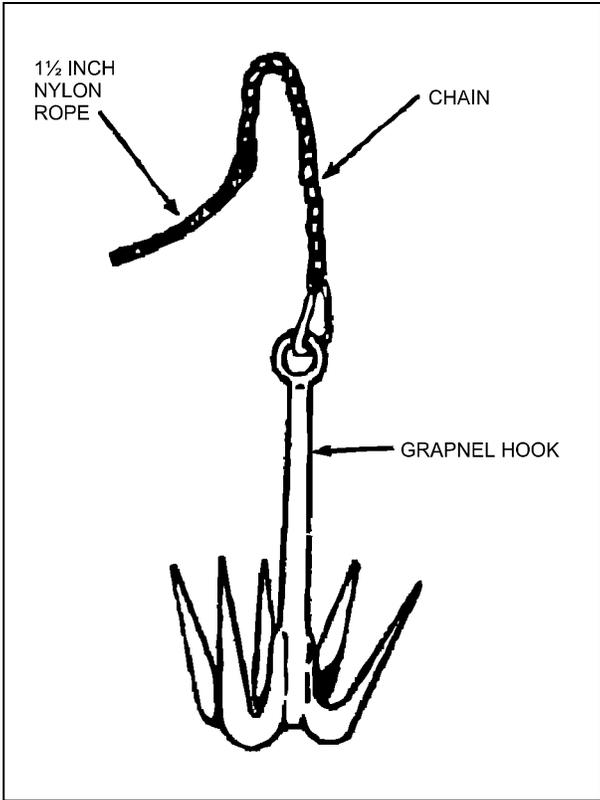


Figure 5-67. Grapnel Hook

**5.13.8 Level “A” SAR Medical Kit**

This medical kit (Figure 5-64) is to be available on all surface vessels and rescue boats. The Level “A” SAR medical kit is designed for all units that maintain SAR capability. Chapter 7 contains information on medical procedures. Appendix D contains the list, with stock numbers of the medical equipment for the kit.

**Note**

- Changes to the contents of the Level “A” medical kit by local commands (including the ship’s IDC) are not authorized.
- There shall be a minimum of one Level “A” medical kit on the forecastle, and one Level “A” medical kit on the rescue boat.

**5.13.9 Twenty- and Twenty-Four-Inch Life Ring**

Both the 20- and 24-inch life rings (Figure 5-69) are constructed of an inherently buoyant material that is formed into a doughnut shape. Line is added on the perimeter of the life rings to give survivors additional handholds. For high-visibility day usage, the rings are painted orange. The life ring shall be stenciled IAW NSTM 077, and a minimum 50 feet of 3/8-inch circumference propylene line shall be attached to the life rings so that they may be retrieved.

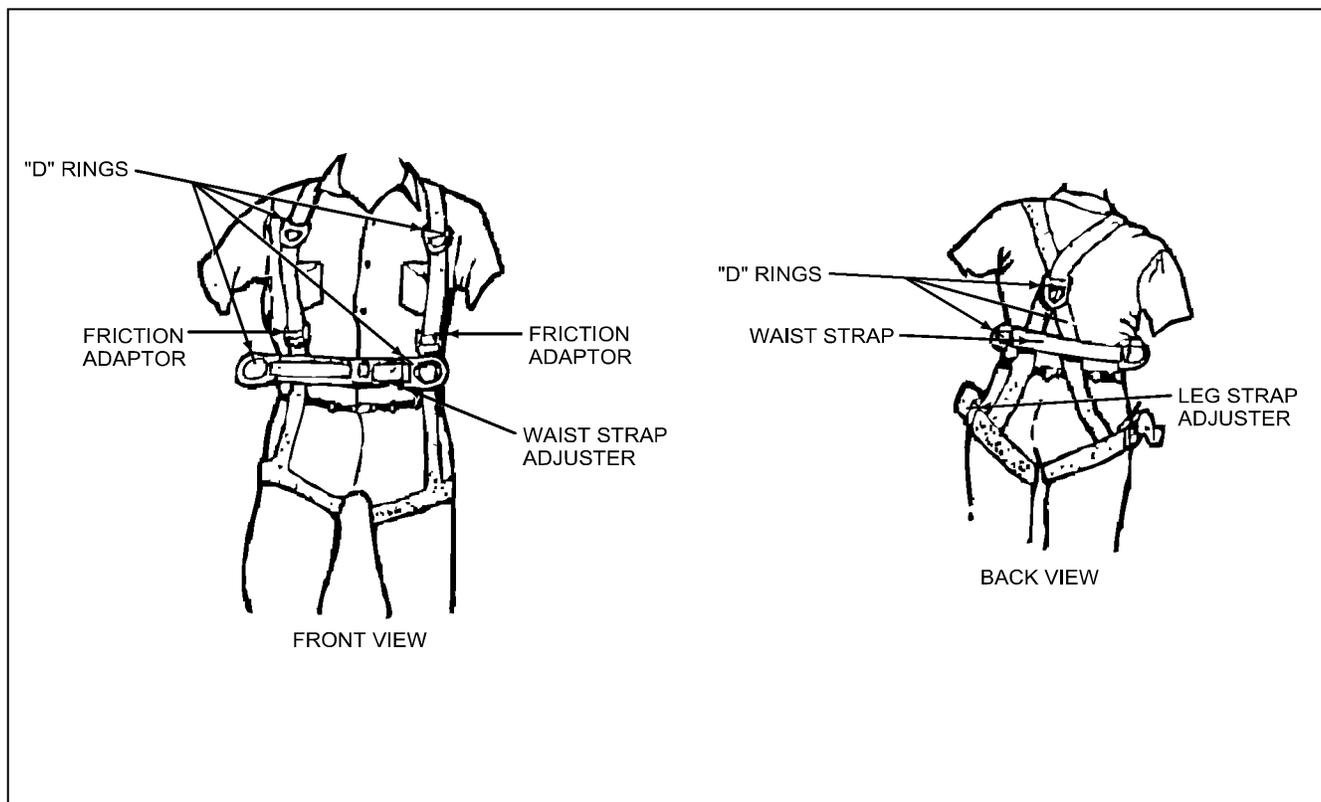


Figure 5-68. Safety Harness

**Note**

- For low-visibility and night usage, chemical lights are attached to the life rings.
- One 20-inch life ring (with line) is required on a RHIB boat.
- One 24-inch life ring (with line) is required on the forecastle, and aboard a motor whaleboat when used as a rescue boat.

**5.13.10 Megaphone**

Megaphones, commonly known as bullhorns, are hand-held loudspeakers with an internal 6-volt battery, and should be loud enough to broadcast over shipboard noise to a distance of at least 200 yards.

**5.13.11 M-14 Rifle, and Bandoleer of Ammunition, 30 Rounds**

These items should be used by the ship’s gunner’s mate on the forecastle for shark watch.

**5.14 ADDITIONAL RESCUE BOAT EQUIPMENT**

**5.14.1 Pistol and Ammunition**

These items shall be held by the boat officer or qualified crewmember at the discretion of the ship’s commanding officer.

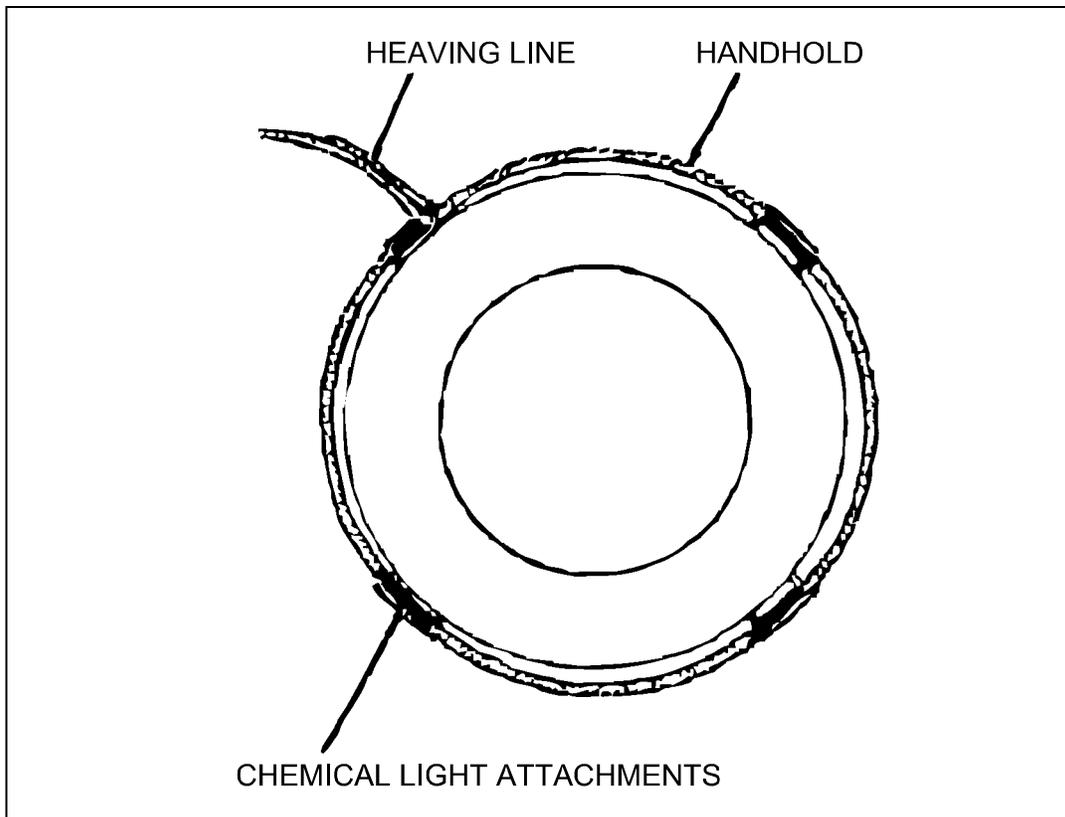


Figure 5-69. Twenty- and Twenty-Four-Inch Life Rings

#### 5.14.2 Boat Hook

The boat hook (Figure 5-70) is a 6-foot wooden staff, with a brass hook and prod at one end, used to fend off or hold on. When used for SAR its purpose is to snag and retrieve the survivor's parachute.

#### 5.14.3 Radio Set (UHF)

A portable UHF radio is needed that enables the rescue boat to monitor UHF frequencies (Chapter 6) normally associated with emergency and SAR operations.

#### 5.14.4 Semaphore Flags

Used only if a signalman is required in the rescue boat. Semaphore is a system of signaling by a person. A special flag is held in each hand and various positions of the arms indicate specific letters, numbers, or statements.

#### 5.14.5 Flashlights

Two flashlights powered by two dry-cell batteries, contained in a plastic case.

#### 5.14.6 Shipboard Battle Lantern

The general shipboard portable battle lantern is an acceptable battery-operated rescue boat search lantern. The lantern's power source is two 6-volt dry-cell batteries connected in parallel that are contained in a watertight plastic case. A rigid carrying handle is secured to the top of the case. The lantern is activated by a toggle switch. When the batteries are fresh, the lantern can be used continuously for approximately 8 hours.

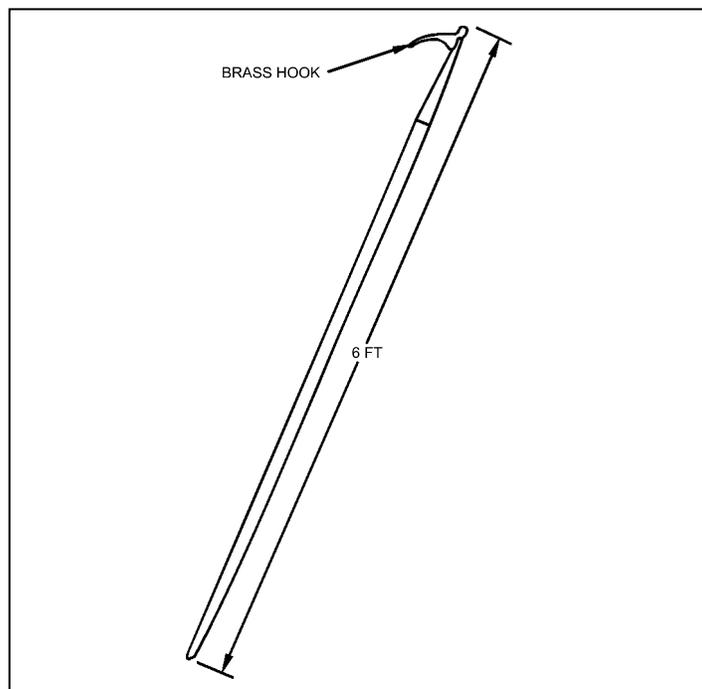


Figure 5-70. Boat Hook

#### 5.14.7 Hand-Held Signal Light

Only required if a signalman is required in the rescue boat. The multipurpose signaling light is designed to operate from a 9-volt dry-cell battery or from ship's power. Ordinarily, it is used in small boats for signaling or illumination. For signaling, the lamp may be held in the hand and operated with the trigger in the pistol grip handle. It may be mounted and operated by remote control. It has an effective signaling range of 4,000 yards and is designed to send up to twelve words per minute.

#### 5.14.8 MK-79 Pencil Flare

Pyrotechnic devices should not be used in areas where flammable fluids or other combustible material may be ignited. These marking devices are used for marking positions or determining wind direction. Pyrotechnics should be stored in a dry, well-ventilated magazine out of the direct rays of the sun and protected against excessive or variable temperatures.

#### 5.14.9 Night Vision Goggles

NVGs (AN/PU-7A, or equivalent) should be available to lookouts and boat crews.

#### Note

Utilization of high-power floodlights or any other light source will impair use of NVGs and/or render them useless. If NVGs are to be used, all extraneous sources of light shall be extinguished.

## CHAPTER 6

# Search and Rescue Communications Procedures

### 6.1 IMPORTANCE OF COMMUNICATIONS

The importance of communications throughout a SAR mission cannot be overemphasized. From the transmission of a distress message to notification of the search unit and from coordination of the search to intercommunication within the individual rescue unit, communication is the thread that weaves the separate parts into an effective and workable system.

Distress Call. The unit receiving a distress call should follow these basic guidelines:

1. Get all information possible from the distressed party including type, size, and color of craft; nature of emergency; number of persons involved; location; local weather; and sea state (if applicable).
2. Don't switch frequencies. Use other radios if available to alert SAR units and coordinate search. Continue to talk to party until rescue is accomplished.

### 6.2 CONTROL COMMUNICATIONS

It is essential that the guidelines established in International Aeronautical and Maritime Search and Rescue Manual (IMSAR) used by Navy units prosecuting a SAR case. The communications responsibilities of the SMC and OSC shall be in accordance with IMSAR Manual.

#### 6.2.1 Search Unit Reports

Ten to twenty minutes prior to arrival at the search area, the SRU reports to the OSC. The report includes call sign, estimated time of arrival on scene, on-scene communications capability, planned search speed, and on-scene endurance. Upon arrival at the designated search area, a report of the current weather at the scene is relayed to the OSC. When an aircraft SRU reports to the OSC, the OSC accepts responsibility for flight-following service. It is essential, therefore, that each aircraft SRU makes "OPS normal" reports to the OSC at regular intervals. Normally, multiengine aircraft will make reports every 30 minutes and single-engine aircraft and helicopters every 15 minutes. Upon completion of the assigned search period the SRU reports the results of the search to the OSC.

#### 6.2.2 Situation Reports

Situation reports (SITREPs) are to be transmitted by the OSC to the SMC upon arrival at the search area, when change occurs, or every 4 hours. The SITREP is to include:

1. SITREP number (numbered numerically by OSC)
2. Date/time group of SITREP

## **NTTP 3-50.1**

3. Search unit's on-station arrival time, with estimated off-station time
4. On-scene weather, wind, and sea conditions
5. Pertinent new developments
6. Major modifications to search plan
7. Requests for additional assistance
8. Summary of search areas with probability of detection
9. Recommendations.

### **6.3 SEARCH AND RESCUE FREQUENCIES**

The following frequencies are the internationally recognized SAR frequencies.

#### **6.3.1 Distress Frequencies**

500 kHz — International CW/MCW distress and calling

2182 kHz — International voice distress, safety and calling

8364 kHz — International CW/MCW lifeboat, life raft, and survival craft

40.5 MHz — U.S. Army FM distress

121.5 MHz — International voice aeronautical and shipboard emergency (VHF)

156.8 MHz — International FM voice distress, emergency (VHF)

243.0 MHz — Joint/combined military voice aeronautical emergency and international survival craft (UHF).

406.0 MHz — International voice aeronautical and shipboard emergency (UHF).

#### **6.3.2 Commonly Used On-Scene SAR Frequencies**

2670 kHz — Coast Guard HF working frequency

3024.4 kHz — International voice SAR on scene (3023)

5680 kHz — International voice SAR on scene

123.1 MHz — National aeronautical SAR scene of action. International SAR scene of action in U.S. and Canadian International Civil Aviation Organization (ICAO) regions of responsibility in Atlantic and Pacific.

138.78 MHz — U.S. military voice SAR on scene and direction finder (DF)

155.16 MHz — FM frequency used by some states and local agencies for coordinating SAR operations

157.1 MHz — Coast Guard VHF-FM working frequency (CH 22A)

282.8 MHz — Joint/combined on scene and DF (UHF)

243.0 MHz — Motor whaleboat/rescue helicopter communications

381.8 MHz — Coast Guard Command net (working frequency between USCG aircraft, cutters, etc.).

Shipboard preparations for SAR operations are in the SAR checklist in Appendix B.

### **6.3.3 Coast Guard Datum Marker Buoys**

The Coast Guard routinely deploys DMBs at search datum to assist with sea current/drift calculations. The DMB emits an audio signal for an extended period on the following frequencies: 240.6, 242.65, 248.0, and 275.1 MHz.

## **6.4 SAR BREVITY CODES**

SAR brevity codes are commonly used in military searches and should be known by Navy units participating in a SAR mission. The brevity codes are listed in ACP 165, NWP 55-2-2, and NWP 3-22.5-SAR-TAC.

## **6.5 SURFACE VESSEL SAR COMMUNICATION PROCEDURES**

During SAR operations involving ships/boats and helicopters, communications between all units involved in the SAR operations shall be established for on-scene coordination. Small boats involved in SAR operations shall be equipped with either a UHF or VHF radio. Ships and/or small boats shall monitor the UHF frequencies normally associated with emergency rescue and SAR operations: 243.0 MHz and 282.8 MHz and VHF ch 16.

## **6.6 AVIATION SAR COMMUNICATION PROCEDURES**

During rescue operations it is essential that standardized communication procedures be utilized. The voice, hand, and signal communication procedures contained herein are minimum procedures and will be adequate in most situations. Additional procedures should be established as required to meet local requirements. It is essential during the rescue phase of operations that the RA continuously update the crew on the progress of the rescue. This is especially important at night or in low-visibility situations when pilots are on instrument, rather than visual reference, or where pilots may not be able to see a survivor's location from the landing or hovering site.

### **6.6.1 Rescue Swimmer Radio (AN/PRC-149 Radio Set and C-12631/PRC-149 Radio Control Unit)**

The AN/PRC-149 is part of the aviation RS minimum equipment required for deployment, and is a back-up means of communication to rescue hand signals. Additional information on the operating limitations and inspection cycle can be found in the NAVAIR 16-30PRC-149-1 technical manual.

#### **Note**

Immediately after signaling "I am all right," the aviation RS should perform a radio check and establish radio communications with the SRU.

### **6.6.2 Rescue Hand Signals**

#### **Note**

Either hand may be used to perform all rescue hand signals that are communicated with one hand.

**NTTP 3-50.1**

The primary means of communication between the RS and the rescue platform in a maritime environment are the standard hand signals contained in this chapter. In an inland SAR situation, a hand-held radio is essential whenever crewmembers are out of visual range of the aircraft. Hand signals are to be used whenever radio communications are not possible. For overwater situations, prudent use of the AN/PRC-149 RS radio is mandatory when rescue hand signals are not sufficient to convey a situation. The hand signals illustrated in Figure 6-1 are the standard signals for use by rescue personnel or survivors where appropriate. All SAR crewmembers shall be familiar with the meaning of all rescue hand signals.

DAY SIGNALS		
MEANING	SIGNAL	FIGURE
I am all right	Raised arm, open hand, fingers extended	
Ready for pickup	Raised arm, thumb up	
In trouble, need assistance	Vigorous waving of one arm	

Figure 6-1. Rescue Hand Signals (Sheet 1 of 12)

DAY SIGNALS		
MEANING	SIGNAL	FIGURE
Deploy raft	Clenched fists, arms crossed overhead	
Deploy radio	Hand held to ear	
Deploy rescue hand tool	Clenched fist, arm pumping motion	

Figure 6-1. Rescue Hand Signals (Sheet 2 of 12)

DAY SIGNALS		
MEANING	SIGNAL	FIGURE
Deploy rescue litter	One arm raised with open palm, fingers extended, other arm raised over the swimmer's head and touching the first arm at the elbow	
Deploy rescue basket/net	Both arms raised, palms open, fingers extended, at a 45° angle to the side of the swimmer's head	
Raise cable/ ready to be hoisted	Raised arm, thumb up	

Figure 6-1. Rescue Hand Signals (Sheet 3 of 12)

DAY SIGNALS		
MEANING	SIGNAL	FIGURE
Stop hoisting	Raised arm, clenched fist	
Lower cable	Raised arm, thumb downward	
Heave around, haul back to ship	Raised arm, thumb up, trail line in hand	

Figure 6-1. Rescue Hand Signals (Sheet 4 of 12)

DAY SIGNALS		
MEANING	SIGNAL	FIGURE
Deploy personal flotation device	Either hand palm down on crown of head	
Request assistance of additional rescue swimmer	Either arm out, palm down, rotating in circular motion	
Request rescue boat assistance	Both arms raised over head, palms together	

Figure 6-1. Rescue Hand Signals (Sheet 5 of 12)

DAY SIGNALS		
MEANING	SIGNAL	FIGURE
Failed hoist	Clenched fist over clenched fist followed by a thumbs-down by hoist operator	
Deploy rescue seat	Both arms outstretched, palms up	
Deploy oxygen/suction unit	One palm cupped over mouth and nose, clenched fist in front	

Figure 6-1. Rescue Hand Signals (Sheet 6 of 12)

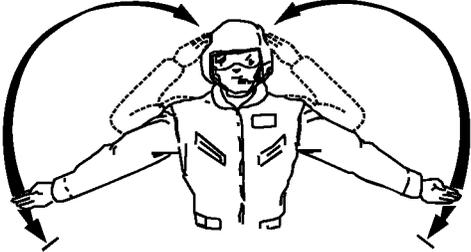
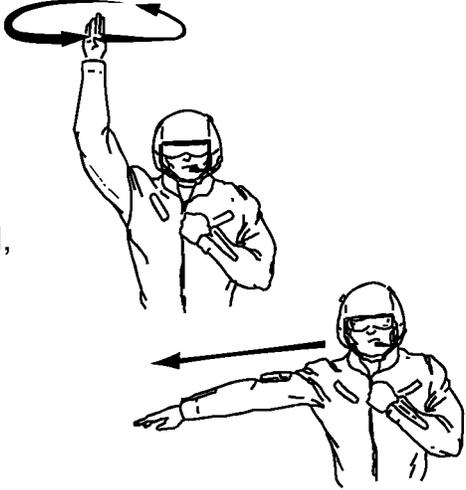
DAY SIGNALS		
MEANING	SIGNAL	FIGURE
Deploy medical kit	Both arms raised, palms overlapping and touching top of head	
Off the deck, easy up	Arms out, palms up, move in upward motion to top of head	
Clear of all terrain, clear for direction of flight	Arm/fingers extended, move in circle motion above head, followed by direction of flight	

Figure 6-1. Rescue Hand Signals (Sheet 7 of 12)

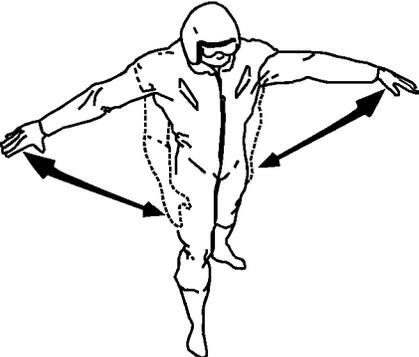
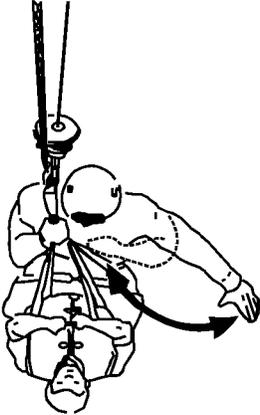
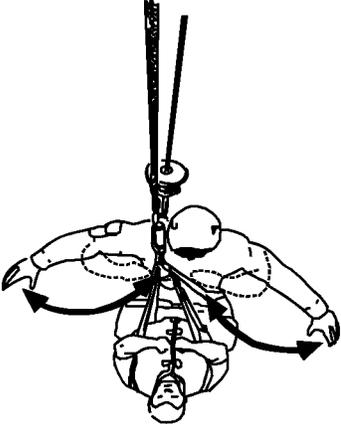
DAY SIGNALS		
MEANING	SIGNAL	FIGURE
Approaching deck for termination of short haul	Repeated motion of arms extended out, palms down and moving in downward motion repeatedly to seat of pants	
Five feet above deck	One arm extended out to side, fingers extended, palm down, extend arm in and out once	
10' above deck	Both arms extended out to sides, fingers extended, palms down, extend arms in and out once	

Figure 6-1. Rescue Hand Signals (Sheet 8 of 12)

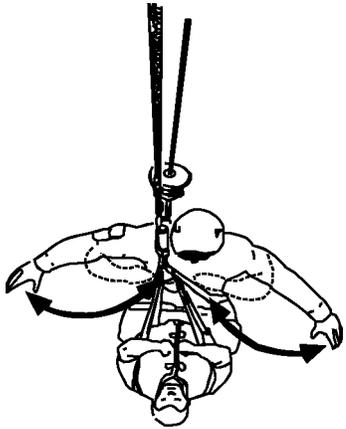
DAY SIGNALS		
MEANING	SIGNAL	FIGURE
20' above deck	Both arms extended out to sides, fingers extended, palms down, extend arms in and out twice in rapid succession	
NIGHT SIGNALS		
MEANING	SIGNAL	FIGURE
I am all right	Swimmer's lighting device on, raised arm, palm open, fingers extended	
Move in for pickup	Wave chemical light	

Figure 6-1. Rescue Hand Signals (Sheet 9 of 12)

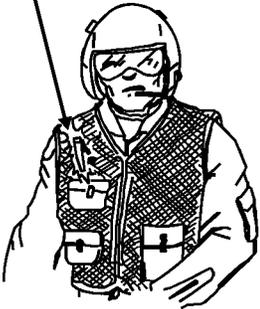
NIGHT SIGNALS		
MEANING	SIGNAL	FIGURE
In trouble, need assistance	Wave signal device	
In trouble, need assistance	Blue strobe on	STROBE LIGHT WITH BLUE LENS 
In trouble, need assistance. If on rope or hoist, set down immediately	Blue chemical light (activated)/blue strobe on	STROBE LIGHT WITH BLUE LENS/ CHEMICAL LIGHT (ACTIVATED) 

Figure 6-1. Rescue Hand Signals (Sheet 10 of 12)

DD HAND SIGNALS		
MEANING	SIGNAL	FIGURE
Move left	Left arm at 90 degrees, palm down	
Move right	Right arm at 90 degrees, palm down	
Move away	Free arm bent at elbow, palm to forehead, thrust hand out so entire arm is at 90 degrees. Repeat until clear of surface	

Figure 6-1. Rescue Hand Signals (Sheet 11 of 12)

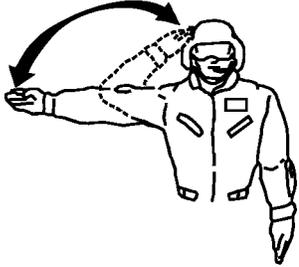
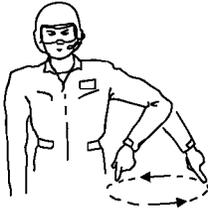
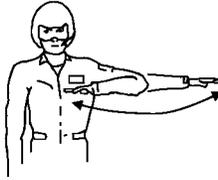
DD HAND SIGNALS		
MEANING	SIGNAL	FIGURE
Up	Either arm out to 90 degrees, palm up. Bend arm at elbow, bring palm to forehead. Repeat until at desired height	
Down	Either arm out to 90 degrees, bend arm at the elbow, hand pointing down. Make circular motion with hand. Repeat until at desired height	
Level off	Either arm outstretched to 90 degrees, palm down. Bend arm at elbow, bring hand to chest. Repeat until action taken	

Figure 6-1. Rescue Hand Signals (Sheet 12 of 12)

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# CHAPTER 7

## Medical Procedures

### 7.1 BASIC REQUIREMENTS

Search and rescue and emergency medical care often are closely associated. In a maritime SAR scenario, emergency medical care begins in the rescue vehicle. In an overland SAR scenario, emergency medical care may begin on scene prior to survivor recovery or in the helicopter, depending on the situation. CC and RS personnel shall maintain qualifications and training in basic first-aid, cardiopulmonary resuscitation (CPR) and Level “A” medical kits per OPNAVINST 3130.6 (series). The following medical responsibilities apply to CCs and RSs during a SAR mission:

1. En route to the survivor assess the MOI. This takes into account how the survivor was injured. MOI includes the strength, direction, and nature of the forces that caused the injury. You should also have an “index of suspicion,” which is the anticipation that certain types of accidents will produce specific types of injuries. With this thought process, the SRU crew can determine what equipment will be needed to affect the rescue and have it rigged and staged prior to arriving on scene.

#### Note

At the earliest opportunity, the SRU shall communicate the survivor’s medical condition to the OSC/SMC and request instructions on where to transport the survivors for advanced medical care.

2. Administer immediate first aid to survivors to the extent that the survivor can be recovered into the SRU and transported to advanced medical care.
3. Prevent further injuries to survivors during the rescue and transport to a medical facility. The presence of a hospital corpsman as part of the SAR crew does not alter the requirement for other crewmembers to have a basic knowledge of emergency medical procedures. The CC and aviation/surface RS shall have a working knowledge of all equipment in the Level “A” medical kit.

#### 7.1.1 Blood-borne Pathogen and Body Substance Isolation Precautions

Organisms called pathogens cause diseases. Blood-borne pathogens are transmitted to rescue personnel via direct unprotected contact with infected blood or bodily fluids of a victim. It is impossible to visually identify a victim who is infected with these pathogens. For this reason, all bodily fluids from a survivor should be considered infected.

Body substance isolation (BSI) precautions shall be accomplished prior to primary survey or administering medical treatment to a survivor. BSI can be accomplished in varying degrees, dependant on the situation. The following are minimum BSI requirements for rescue personnel:

### Note

Rescue aircrewman, rescue swimmers, and hospital corpsman meet the criteria established by Navy Occupational Safety and Health and BUMED for professional rescuers and should receive the Hepatitis “B” vaccine (HBV) for protection from the Hepatitis “B” virus.

1. Donning the disposable latex gloves provided in the Level A/B/C SAR medical kit prior to performing a primary survey or medical treatment to the survivor.
2. Depending on the victims’ injuries and the level of medical care provided, donning all the contents of the biohazard kit provided in the Level A/B/C SAR medical kit may be required.
3. Upon completion of the SAR/MEDEVAC mission, rescue personnel should complete the following:
  - a. Remove any personal contaminated clothing, place in a plastic bag separate from other laundry, and decontaminate by washing in detergent and warm water as soon as possible.
  - b. Shower with warm water and antibacterial soap.
  - c. Decontaminate aircraft cabins, rescue boats, ship decks, and equipment by washing with fresh water and detergent.
  - d. Examination by medical department personnel.

### 7.1.2 Hazardous Material/Composite Fiber Exposure

Many modern aircraft are composed of composite materials and contain petroleum and chemical products that may be harmful to rescuers if they are inhaled, ingested, or come into contact with exposed skin. The following guidelines should be followed when operating at or around an aircraft mishap site:



Inhalation of composite material fibers resulting from aircraft fires or damaged aircraft materials may be harmful to rescue personnel. If smoke is present, rescue personnel shall be deployed upwind and will approach the aircraft in a manner as to avoid any smoke or hazardous composite airborne fibers.

Personnel assigned responsibilities at aircraft mishap sites over land or over water are strongly recommended to don PPE prior to entering mishap scene. Recommended PPE includes coveralls, steel-toed boots, goggles or safety glasses, full-face respirator with HEPA/organic vapor cartridges, and heavy-duty gloves. Personnel that utilize respirators shall be trained and qualified in accordance with OPNAV 5100.23 (series).

1. Helicopters should maintain a sufficient distance from the mishap scene to preclude the spread of airborne composite fibers from rotor downwash. Deploy personnel upwind of the mishap site.
2. Personnel should don additional PPE as available and approach the scene from upwind, thereby limiting exposure to airborne fibers.

### Note

During a SAR mission, rescue personnel should only enter an aircraft mishap site to provide medical attention and recovery of any survivors. Once all survivors or mishap personnel are recovered, the mishap scene should not be disturbed any further, or evidence collected, unless directed by a mishap investigator or unit safety officer.

3. Provide medical attention to survivors, recover into the rescue vehicle, and transport to advanced medical facilities as soon as possible.
4. Egress of rescue personnel and victim(s) from scene should be accomplished as soon as safely possible to preclude prolonged exposure to any airborne composite fibers.

#### 7.1.3 SAR Medical Technicians (HM NEC 8401)

SAR medical technicians are assigned to duty involving flying as a crew member (DIFCREW) billets by BUPERS and shall maintain all NATOPS, SAR, and medical training and qualifications outlined in OPNAVINST 3710.7 (series), OPNAVINST 3130.6 (series), and BUMEDINST 1510.17 (series). Hospital corpsmen in training (NEC 8201) for SAR medical technician shall not be assigned SAR duty until fully qualified per above instructions.

### 7.2 SAR CREW MEDICAL PROCEDURES

Early assessment and preparation for providing medical treatment and transportation of survivors should begin as soon as possible after notification of a SAR/MEDEVAC mission. The following guidelines should be considered during the initial stages of a SAR/MEDEVAC mission:

#### 7.2.1 Maritime Missions

1. If the number of survivors may exceed helicopter or rescue boat capacity, additional SRUs should be directed to the scene to assist. In multiple-survivor rescue missions, the SRU should consider adding additional rescue personnel, rescue equipment, blankets, and medical kits.
2. During multiple-survivor scenarios, immediate transportation of severely injured survivor(s) may necessitate leaving the rescue swimmer in the water with remaining survivors. If medical facility is out of visual range of the rescue scene, the following guidelines should be considered prior to leaving a rescue swimmer on scene:
  - a. Additional SRUs are en route or on scene to provide recovery of RS and remaining survivors.
  - b. Operable life rafts are on scene to sustain RS and survivors until return of SRU. RS and/or survivors have operable radio communication. SRU has deployed smoke flares to mark datum, or RS/survivors have signaling devices.
  - c. Environmental conditions (weather, sea state) permit reacquiring RS and survivors visually.
  - d. Depending on SRU transit time, water and air temperature, the possibility of RS and remaining survivor hypothermia should be considered.

## **7.2.2 Overland Missions**

1. If available, a SAR medical technician should be the first rescue crewman deployed from the helicopter to recover survivors. Depending on the situation and number of survivors, additional rescue personnel should be deployed to assist in the recovery effort.
2. If the number of survivors may exceed helicopter capacity, additional SRUs should be directed to the scene to assist. In multiple-survivor rescue missions, the SRU should consider adding additional rescue personnel, rescue equipment, blankets, and medical kits.
3. Helicopter power limitations, multiple-survivor scenarios, or need for immediate transportation of severely injured survivor(s) may necessitate leaving rescue personnel and survivors on scene. The following guidelines should be considered prior to leaving personnel on scene:
  - a. Additional SRUs are en route or on scene to provide recovery of rescue personnel and remaining survivors.
  - b. Rescue personnel have operable radio communication and signaling devices.
  - c. Environmental conditions permit reacquiring rescue personnel and survivors visually.
  - d. Rescue personnel and survivors have clothing, provisions, and protection from the elements to safely remain on scene until recovery can be completed.

## **7.2.3 SAR Crew Medical Training**

The minimum medical procedures and equipment qualifications and proficiency training for helicopter crew chiefs, aviation rescue swimmers, surface rescue swimmers, and SAR medical technicians (SMTs) are outlined in the OPNAVINST 3130.6 (series). Additionally, SMTs will have medical protocols, procedures, and a continuing medical education (CME) program supervised by the locally designated medical director.

## **7.3 MEDICAL DIRECTION**

Each SRU shall have a physician assigned in writing (flight surgeon/medical officer, for surface ships a senior medical officer or independent duty corpsman) as a medical director accountable for the activities of SRU personnel within the system. The medical director delegates medical practice to nonphysician providers (such as RS/SMT's) and must be involved in all aspects of the patient care system. The medical director assumes the ultimate responsibility for medical direction, or oversight of the patient-care aspect of the SRU. The medical director also oversees training, develops protocols/standing orders (a list of steps for assessment and intervention to be performed in different situations), and is a critical part of the quality improvement process. A first responder or EMT-B operates as a designated agent of the physician. In essence, as a RS or SMT, authority to give medication or provide emergency care is actually an extension of the medical director's license to practice medicine.

### **Note**

Automated external defibrillator (AED) is not authorized for use in naval aircraft.

### 7.3.1 General Medical Procedures

Medical treatment of the survivor will normally take place in the SRU during transport to a medical facility. During an in-water scenario, the RS may need to provide rescue breathing prior to survivor recovery. During an overland scenario, rescue crewman may need to stabilize the survivor prior to recovery. While each rescue incident will differ in the treatment necessary, there are certain basic emergency care procedures (Figure 7-1) that are applicable in every case. They are as follows:

#### Note

When two or more rescue crewmen are providing medical treatment to a survivor, one of the rescue crewmen must assume a supervisory role and direct the efforts of the others. In any rescue scenario where a SMT (helicopter) or independent duty corpsman (rescue boat or ship) is part of the rescue crew, he/she shall supervise the medical treatment of the survivor(s) during recovery and transport to an advanced medical facility. In the absence of medical department personnel, the senior enlisted rescue crewman (helicopter or rescue boat) shall determine who will provide medical supervision of the treatment of the survivor(s).

1. Airway — Ensure an airway is maintained. Open airway using head tilt-chin lift (for suspected cervical/spinal injuries, use jaw thrust maneuver). Remove any foreign material from the mouth.
2. Breathing — Ensure the survivor is breathing:
  - a. If the survivor is speaking, breathing is present.
  - b. Visually check the survivor's mouth and/or nose.
  - c. Feel for breath using the side of the rescuer's face or bare hand.
  - d. If in the water, place the RS's mask under the survivor's mouth/nose, and check for fogging.

#### Note

- In a water-rescue scenario: If the survivor is not breathing, the RS shall give two rescue breaths to the survivor, safely complete all applicable disentanglement/recovery procedures, and signal the SRU for immediate recovery of the survivor. After the completion of applicable disentanglement/recovery procedures, the RS shall continue rescue breathing for the survivor until recovery by the SRU. Continue with step 3 (circulation) once in the SRU.
  - Overland rescue scenario: Give two breaths, and check circulation.
3. Circulation — Check for pulse every 5 to 10 seconds. If victim is breathing, pulse is present. If pulse is absent, initiate CPR.
  4. Bleeding — Check for and treat severe bleeding.
  5. Fractures — Check for and treat any actual or suspected fractures.
  6. Burns — Check for and treat all burns.
  7. Shock — Treat for shock, as it is always present, to some degree, in any rescue situation.



The rescue/MEDEVAC litter should not be used in a maritime rescue scenario if the survivor has immediate life-threatening injuries, i.e., no breathing, severe bleeding. A survivor with immediate life-threatening injuries shall be recovered to the SRU via the fastest means possible.

#### **Note**

Personnel who are unconscious, who have fallen three times the survivor's height, or who have been ejected from an aircraft must be presumed to have spinal injuries. Utilization of the rescue/MEDEVAC litter for recovery in either an overwater or overland rescue scenario is highly recommended, if at all reasonable, to help prevent a potentially life-threatening or permanent neurological injury. In conjunction with use of the litter, total spinal immobilization, including cervical collar, should be applied at the earliest opportunity.

8. The survivor should be immobilized in an appropriate cervical collar and rescue/MEDEVAC litter prior to transport. This will help prevent further damage to a cervical/spinal injury.

### **7.3.2 Diving-Related Injuries**

Survivors who have been breathing compressed gases (i.e., scuba, heeds) should be observed during transport to a medical facility for signs of decompression sickness or embolus. When possible, these survivors should be kept lying flat and changes in aircraft altitude should be kept to a minimum. Transport altitude for the aircraft should be kept as low as safety allows.

### **7.3.3 Environmental Injuries**

Environmental injuries are caused when the survivor is exposed to environments that are hot and/or humid, cold, or submersion in water. Factors effecting environmental injuries are outside air temperature, wind chill, water temperature, rain, snow, and humidity. Onset and severity of environmental injuries to survivors will largely depend on weather conditions, clothing, and exposure time.

#### **7.3.3.1 Hypothermia**

Nearly all victims recovered from the aquatic environment will suffer some degree of hypothermia. The goal in this case is to preserve the victim's temperature, prevent after drop of body core temperature, and have access to the victim so that lifesaving measures can be performed during the transport phase of the rescue.

1. Hydrostatic squeeze — As it applies to hypothermia, hydrostatic squeeze is the constriction of the respiratory system. The severe cold disables the body's ability to take in oxygen. The added stress to the body of being hoisted by the rescue strop allows gravity to take what blood has been pooled in the chest and head and disperse it into the extremities. This can/will send the survivor into respiratory and/or cardiac arrest.
2. After drop — Cold blood from the extremities (arms and legs) gets suddenly reintroduced to the body's core, and drops the body's core temperature below the level needed to sustain life.

3. The procedures for recovery and transport of a hypothermic survivor are as follows:
  - a. Recovery phase — The survivor should be recovered using a rescue/MEDEVAC litter. Use of the DD “double lift” is also acceptable. It is important to keep the hypothermic survivor quiet and immobilized due to the fragile state of their cardiac and respiratory systems. Hoisting from the water in a horizontal position reduces the aggravation of shock caused when the effect of water pressure is removed (hydrostatic squeeze).

#### **Note**

The RS will have to make the decision on when not to use the rescue/MEDEVAC litter based on the environment, and the survivor’s injuries (no ABCs, severe bleeding).

- b. Transport phase — The survivor shall be transported in a horizontal/face-up position on a rescue/MEDEVAC litter. When possible, wet clothing shall be removed. The victim shall be wrapped in a standard wool blanket, and then a reflective casualty blanket (Figure 7-1). These materials are required equipment on all SAR-capable aircraft.

### **7.3.3.2 Heat Emergencies**

1. Heat exhaustion — Survivors with moist, pale, and normal-to-dry skin may have heat exhaustion. Prolonged exposure to excessive heat can create an emergency in which the survivor has moist, pale skin that may feel normal or cool to the touch. As sweating continues, salts are lost, bringing on painful muscle cramps (sometimes called heat cramps). Healthy individuals who have been exposed to excessive heat while working or exercising may experience a form of shock brought about by fluid and salt loss. This condition is sometimes known as heat exhaustion.
  - a. Symptoms:
    - (1) Skin is moist, pale, and normal to cool in temperature.
    - (2) Muscle cramps (usually in the legs and abdomen).
    - (3) Weakness or exhaustion. Sometimes dizziness or periods of faintness are present.
    - (4) Rapid, shallow breathing.
    - (5) Weak pulse.
    - (6) Heavy perspiration.
    - (7) Loss of consciousness possible.
  - b. Treatment — Correct, expedient treatment is essential to the survival of a person experiencing heat exhaustion. Immediate cooling of the survivor is needed. As with all heat-related injuries, removal from the heat source is the first step:
    - (1) Move the survivor into the shade.
    - (2) Loosen or remove the survivor’s clothes, and fan the survivor without chilling them. Do not allow the survivor to get cold; watch for shivering.

- (3) Put the survivor in the supine position, legs elevated no more than 12 inches.
  - (4) If the survivor is conscious and not nauseated, administer small sips of water, or ice chips if available. If patient is unconscious or vomiting, transport the patient on their left side.
  - (5) Treat muscle cramps by administering wet towels to affected areas.
2. Heat stroke — When a person's temperature-regulating mechanisms fail and the body cannot rid itself of excessive heat, the individual will present with hot, dry, or possibly moist skin. Hot skin (whether dry or moist) represents a true emergency. It is a condition that is sometimes known as heat stroke. The problem is compounded when, in response to loss of fluid and salt, the survivor stops sweating, which prevents heat loss through evaporation. More cases of survivors with hot, dry skin are reported on hot, humid days. However, many cases occur from exposure to dry heat.
- a. Symptoms:
    - (1) Skin is hot to the touch, and either dry or moist.
    - (2) Rapid, shallow breathing.
    - (3) Full and rapid pulse.
    - (4) Generalized weakness.
    - (5) Little or no perspiration.
    - (6) Loss of consciousness, or altered mental status.
    - (7) Dilated pupils.
  - b. Treatment — Correct, expedient treatment is essential to the survival of a person experiencing heat stroke. Immediate cooling of the survivor is needed. As with all heat-related injuries, removal from the heat source is the first step:
    - (1) Move the survivor into the shade.
    - (2) Remove the survivor's clothing. Apply cool packs to the neck, groin, and armpits. Keep the skin wet by applying water by sponge or wet towels. Fan aggressively.
    - (3) Put the survivor in the supine position, legs elevated no more than 12 inches.
    - (4) Transport immediately.

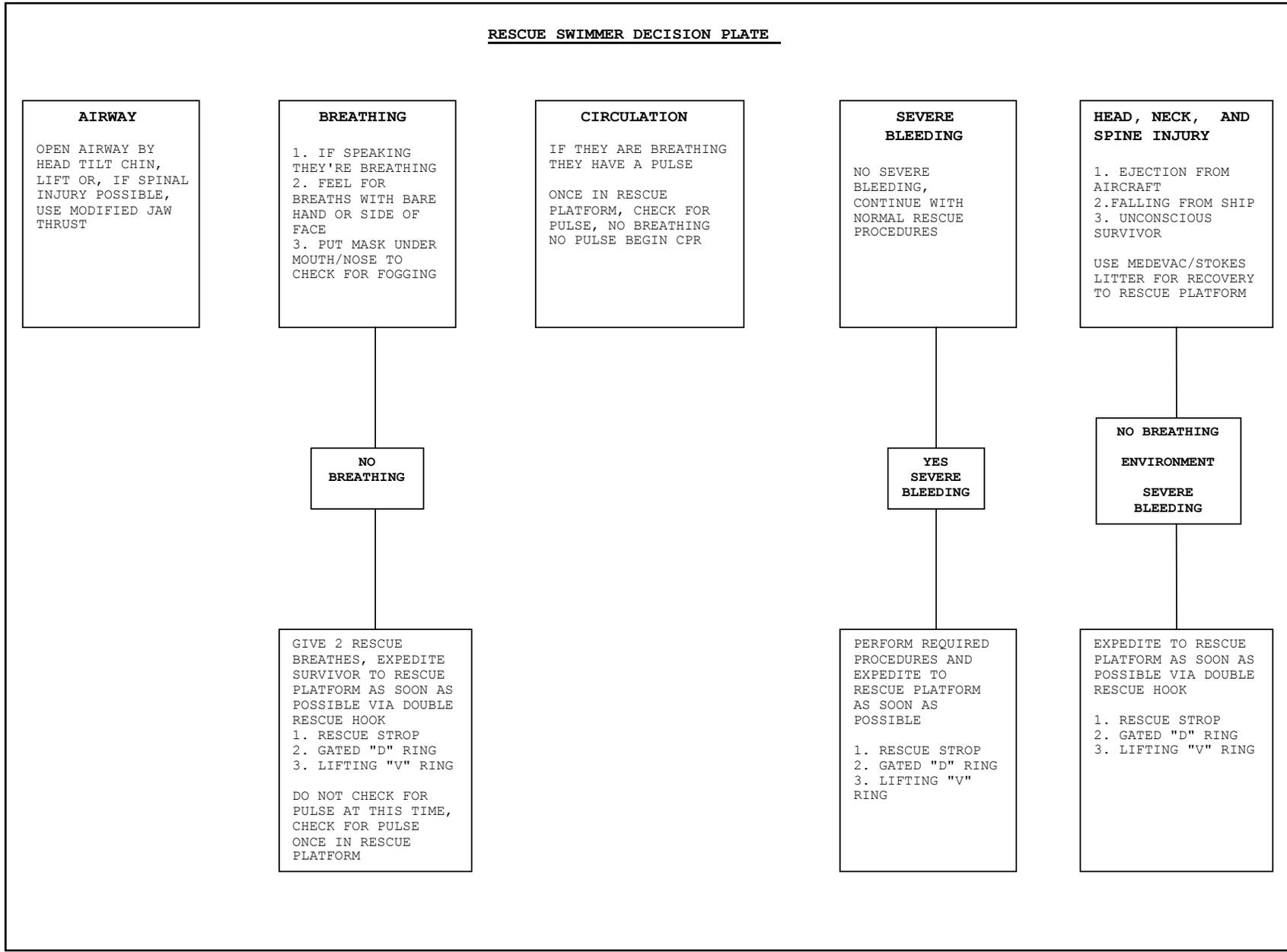


Figure 7-1. Rescue Swimmer Decision Plate

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# CHAPTER 8

## Aviation Survival Equipment

### 8.1 BODY ARMOR (FIGURE 8-1)

#### 8.1.1 The Protective Assembly, Aircrew Survival — Armor A/P22P-18(V)

This protective assembly is a triservice effort designed to replace existing survival vests (Navy/Marine Corps airsave integration survival vest armor protection ensemble (AISAP), the Army survival armor recovery vest, insert, and packets (SARVIP), and the Air Force CMU-21/P) and be usable in all aircraft communities.

#### 8.1.2. Configuration

Enhanced aircrew vital organ protection is provided since the vest assembly is also compatible with soft and hard armor assemblies (PRU-60/P22P-15 or PRU-60A/P22P-15 and PRU-61/P22P-15 or PRU-61A/P22P-15 respectively), and the Army's .50 caliber armor plate. The soft armor assembly (Figures 8-2 and 8-3) can be worn in combination with other components to provide small-arms fire and fragmentation protection including high-velocity shrapnel from antiaircraft rounds. The PRU-61/P22P-15 and PRU-61A/P22P-15 hard armor, in conjunction with soft armor, provides protection against up to .30 caliber armor-piercing (APM-2) rounds. The Army's hard armor plate provides standoff protection against .50 caliber rounds. The A/P22P-18(V) vest has been designed to provide one-hand, two-operation quick disconnect of the hard armor plate (Figure 8-4).

The protective assembly, aircrew survival — Armor A/P22P-18(V) consists of the following:

1. CMU-33A/P22P-18(V) survival vest (Type I or Type II)
2. PRU-60/P22P-15 or PRU-60A/P22P-15 small arms protective soft body armor
3. PRU-61/P22P-15 or PRU-61A/P22P-15 small arms protective hard body armor or Army .50 caliber hard body armor.
4. The A/P22P-18(V) protective assembly is compatible with Navy/Marine Corps LPU-21/P, LPU-23/P, LPU-34/P, and LPU-36/P; Air Force LPU-9, and Army LPU-10 life preservers.

### 8.2 SURVIVAL VEST

#### 8.2.1 The Type I CMU-33A/P22P-18(V) Survival Vest

The Type I CMU-33A/P22P-18(V) survival vest (Figure 8-5) is designed for use by all helicopter and most fixed-wing, non-ejection seat (FWNES) aircraft aircrews.

#### 8.2.1.1 Configuration

The vest's survival equipment stowage pockets are modular, permitting survival items to be configured to suit type command requirements and different environments. This makes it possible to configure the most compatible assembly of survival items for the aircraft and mission being flown, including those special configurations for each of the services for flights into areas requiring chemical, biological, or radiation protection.

A/C Type	Survival Vest	Life Preserver	Parachute Restraint Harness Used	Antiexposure Assembly	Helmet (HGU-)	O2 Mask (MBU-)
C-130	SV-2B (NES/LB) CMU-33 TYPE I	LPU-21 (series) LPU-27/P LPU-34/P LP LPU-35/P LPP-1/1A(pax) LPU-32/P(pax)	NB-8 Back Pack NC-3 Chest Pack w/Quick-fit Harness	CWU-62/P	25(V)2/P 85/5P	N/A
T-2	SV-2B (F/A) CMU-33 TYPE II	LPU-23 (series)	Integrated Torso PCU- 34/P 36/P 51/P 52/P 57/P 58/P	CWU-62/P	68(V)p  85(V)1/P	14(V)1/P 23(V)2/P
T-34	CMU-32 SV-2B (NES/CB) CMU-33 TYPE I	LPU-10 LPU-21 (series) LPU-35/P	NB-6 Back Pack w/Quick-fit Harness	CWU-62/P	47(V)3/P 68(V)1/P 85(V)1/P	17(V)2/P 23(V)6/P
T-38	N/A	LPU-3	BA-22 Back Pack w/Quick-fit Harness	CWU-62/P	68(V)1/P	16/P
T-45	SV-2B (F/A) CMU-33 TYPE II	LPU-23 (series) LPU-33/P LP LPU-36/P LP	Integrated Torso PCU- 36/P 39/P 52/P 58/P 59/P	CWU-62/P	68(V)1/P 85(V)1/P	16/P 23(V)2/P
V-22	CMU-33 TYPE I	LPU-34/P LP LPP-1/1A(pax) LPU-32/P(pax)	N/A	CWU-62/P CWU-79/P(pax) CWU-83/P(pax)	24/P 25(V)2/P 85/8P	12/P 23(V)1/P
H-1/ H-3/ H-2 H-46/ H-60	CMU-24/P (NOT H-2) CMU-30 CMU-33 TYPE I SV-2B (HELO) HBU-23 (RS) TRI-SAR (RS)	LPP-1/1A LPU-21 (series) LPU-28/P (RS) LPU-32/P LPU-34/P LP LPU-35/P	N/A	CWU-62/P CWU-79/P CWU-83/P	24/P 25(V)2/P 84/1P 84/2P 84/3P 84/4P	N/A
AH-1	CMU-30 CMU-33 TYPE I SV-2B (HELO)	LPU-21 (series) LPU-34/P LP LPU-35/P	N/A	CWU-62/P	67/1P	N/A
H-53	CMU-30 CMU-33 TYPE I SV-2B (HELO)	LPP-1/1A LPU-21 (series) LPU-32/P LPU-34/P LP LPU-35/P Pouch Type	N/A	CWU-62/P CWU-79/P CWU-83/P	24/P 25(V)2/P 84/1P 84/4P 84/7P	N/A
H-57	CMU-24/P SV-2B (HELO)	LPU-21 (series) LPU-35/P	N/A	N/A	84/2P	N/A
F/A = Fighter/Attack NES/LB = Nonejection Seat/Land-Based NES/CB = Nonejection Seat/Carrier-Based						

Figure 8-1. Survival Equipment by T/M/S Aircraft (Sheet 1 of 2)

A/C Type	Survival Vest	Life Preserver	Parachute Restraint Harness Used	Antiexposure Assembly	Helmet (HGU-)	O2 Mask (MBU-)
A-4	SV-2B (F/A) CMU-33 TYPE II	LPU-23 (series) LPU-33/P LP LPU-36/P LP	Integrated Torso PCU- 34/P 36/P 51/P 52/P 57/P 58/P	CWU-62/P	34/P 68(V)/P 85(V)1/P	14(V)1/P 23(V)2/P
EA-6	SV-2B (F/A) CMU-33 TYPE II	LPU-23 (series) LPU-33/P LP LPU-36/P LP	Integrated Torso PCU- 34/P 36/P 51/P 52/P 57/P 58/P	CWU-62/P	44/P 68(V)/P	14(V)1/P 23(V)2/P
F-4	SV-2B (F/A) CMU-33 TYPE II	LPU-23 (series) LPU-33/P LP LPU-36/P LP	Integrated Torso PCU- 34/P 36/P 51/P 52/P 57/P 58/P	CWU-62/P	68(V)/P	14(V)1/P 23(V)2/P
AV-8	SV-2B (F/A) CMU-33 TYPE II	LPU-23 (series) LPU-33/P LP LPU-36/P LP	Integrated Torso PCU- 36/P 39/P 52/P 58/P 59/P	CWU-62/P	66(V)/1P 68(V)/P 68(V)6/P 85(V)1/P	16/P 23(V)4/P
F-5	SRU 21/P	LPU-10	BA-22 Back Pack w/Quick-fit Harness	CWU-62/P	68(V)1/P	16/P
F-14	SV-2B (F/A) CMU-33 TYPE II	LPU-23 (series) LPU-33/P LP LPU-36/P LP	Integrated Torso PCU- 34/P 36/P 39/P 51/P 52/P 57/P 58/P 59/P	CWU-62/P	44(V)/P 68(V)/P 85(V)/P	14(V)1/P 23(V)2/P
F/A-18	SV-2B (F/A) CMU-33 TYPE II	LPU-23 (series) LPU-33/P LP LPU-36/P LP	Integrated Torso PCU- 34/P 36/P 39/P 51/P 52/P 57/P 58/P 59/P	CWU-62/P	33/P 55A/P 68(V)/P 68(V)6/P 85(V)1/P	14(V)1/P 23(V)2/P
F/A-18 "Combat Edge" Configured	Same as Above	Same as Above	Same as Above	Same as Above	87(V)/P 89/P	24/P
E/S-3	SV-2B (F/A) CMU-33 TYPE II	LPU-23 (series) LPU-33/P LP LPU-36/P LP	Integrated Torso PCU- 26 (Blue Angles) 34/P 36/P 50/P 52/P 57/P 58/P	CWU-62/P	49/P 68(V)3/P	15/P 23(V)2/P
E/P-3	SV-2B (NES/CB) CMU-33 TYPE I	LPU-21 (series) LPU-35/P LPU-32/P (pax) LPP-1/1A (pax)	NB-8 Back Pack w/Quick-fit Harness	CWU-62/P	25(V)2/P 47(V)4/P 68(V)2/P	N/A
C-2	SV-2B (NES/CB) CMU-33 TYPE I	LPU-21 (series) LPU-35/P LPU-32/P (pax) LPP-1/1A (pax)	NB-8 Back Pack w/Quick-fit Harness	CWU-62/P	25(V)2/P 47(V)4/P 68(V)2/P	17(V)2/P
E-2	SV-2B (NES/CB) CMU-33 TYPE I	LPU-23 (series) LPU-35/P	Integrated Torso PCU- 36/P 51/P 52/P 55/P 58/P 60/P	CWU-62/P	52(V)2/P 68(V)4/P	17(V)1/P 17(V)5/P 23(V)5/P 23(V)7/P
C-12	CMU-24/P CMU-33 TYPE I	LPU-10 LPU-21 (series) LPU-34/P LP LPU-35/P LP	N/A	N/A	85/5P	N/A
F/A = Fighter/Attack NES/LB = Nonejection Seat/Land-Based NES/CB = Nonejection Seat/Carrier-Based						

Figure 8-1. Survival Equipment by T/M/S Aircraft ( Sheet 2 of 2)

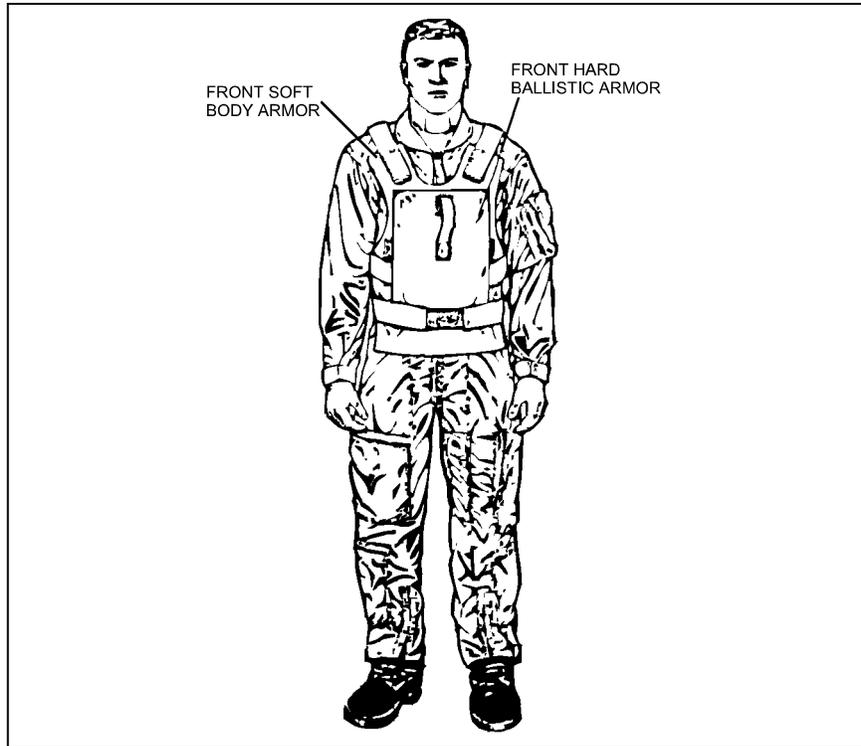


Figure 8-2. Front View of the Protective Assembly, Aircrew Survival — Armor A/P22P-18(V)

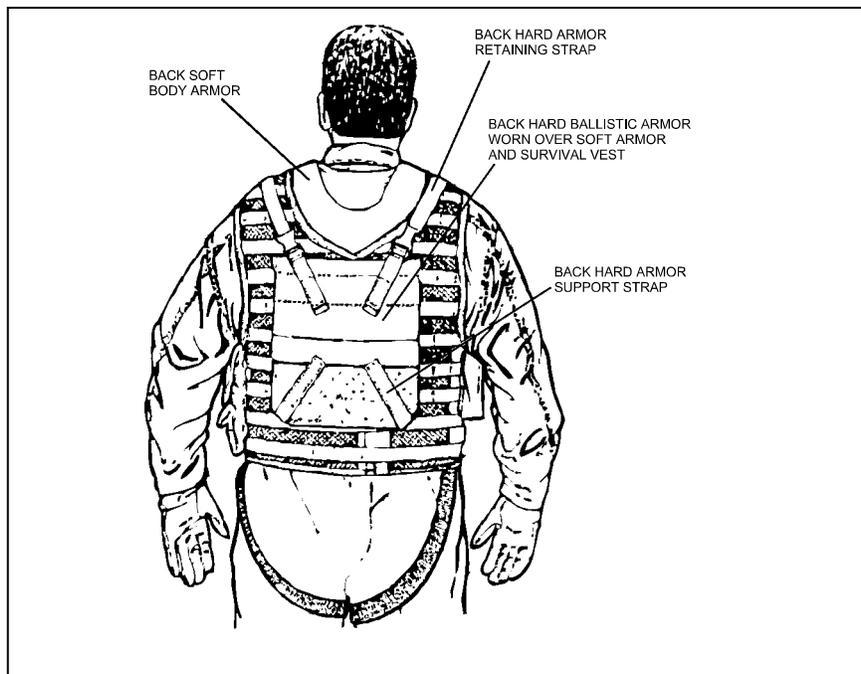


Figure 8-3. Rear View of the Protective Assembly, Aircrew Survival — Armor A/P22P-18(V)

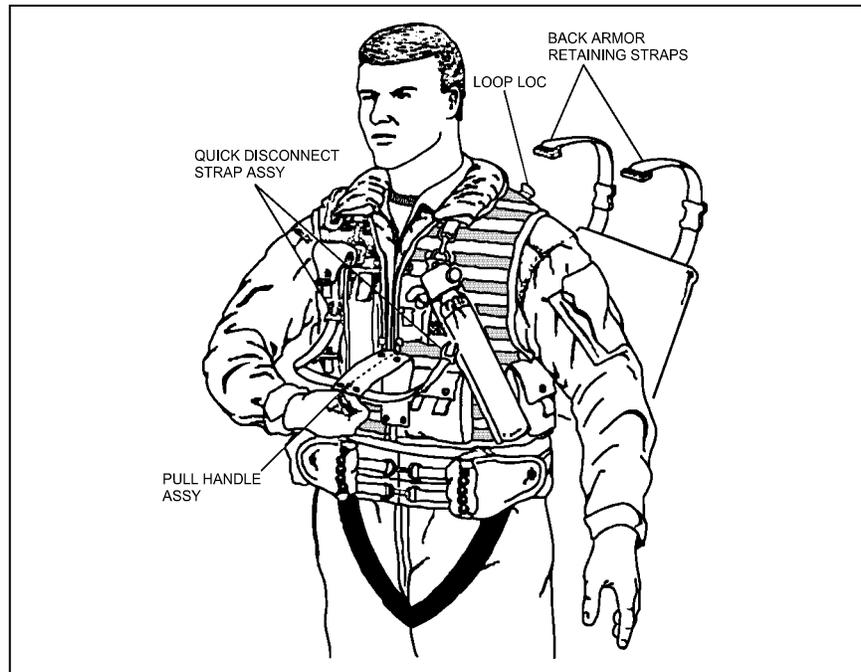


Figure 8-4. Both the Front and Back Hard Armor Plates Are Released Simultaneously With One Hand

If authorized, aircrew members in aircraft positions with armored seats may remove the back soft ballistic insert from its casing and wear only the front soft armor; however, after the removal of the rear ballistic armor insert, the back casing must remain attached to the front armor and casing to retain the front armor in the proper position on the wearer.

The Type I vest has an integrated hoisting harness, and a two-way plastic slide fastener (zipper) on the front to allow the vest to be opened from either the top or bottom for easier access for armor disconnect.

#### Note

- Compatible with soft and hard armor: PRU-60/P22P-15 or PRU-60A/P22P-15 and PRU-61/P22P-15 or PRU-61A/P22P-15.
- Comes equipped with LPU-21/P and LPU-23/P collar lobe attachment straps.

#### 8.2.1.2 Application

The Type I vest is intended for use by aircrews of helicopters and most FWNES aircraft in conjunction with the aircrew armor assemblies.

#### Note

The CMU-33/P22P-18(V) Type I may also be worn with only the soft armor or as a survival vest without any armor.

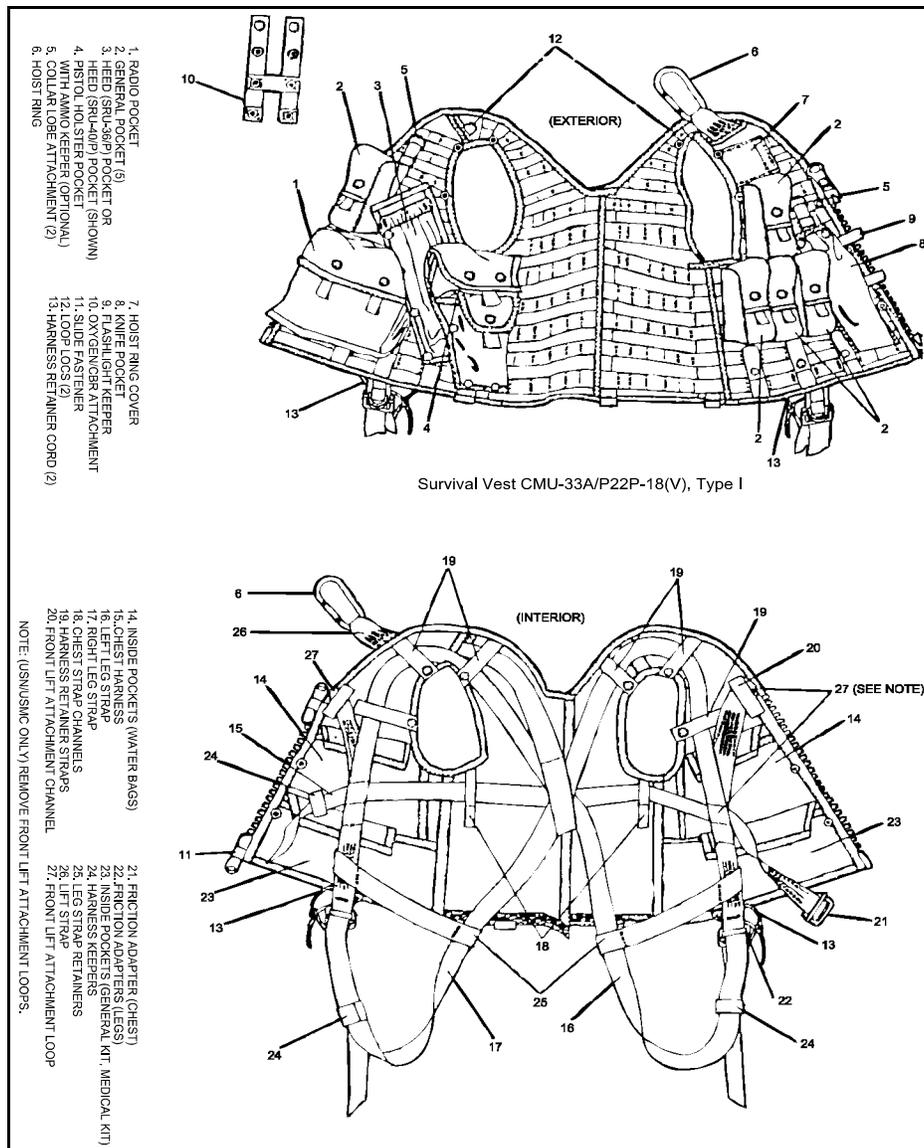


Figure 8-5. The Type I CMU-33A/P22P-18(V) Survival Vest

### 8.2.2 CMU-33A/P22P-18(V) Type II Survival Vest

The CMU-33A/P22P-18(V) survival vest Type II (Figure 8-6) is designed for aircrews of fixed-wing ejection seat aircraft and some FWNES. The CMU-33 Type II is worn over the PCU-33 series or PCU-56 series integrated torso harness in the same fashion as the SV-2B it is replacing.

#### 8.2.2.1 Configuration

The vest's survival equipment stowage pockets are modular, permitting survival items to be configured to suit type command requirements and different environments. This makes it possible to configure the most compatible assembly of survival items for the aircraft and mission being flown including those special configurations for each of the services for flights into areas requiring chemical, biological, or radiation protection. The CMU-33 Type II vest does not include an integrated hoisting harness, but comes with integrated torso harness attachment straps. The Type II vest is designed to integrate with torso harnesses such as the PCU-33 series or PCU-56 series worn by fixed-wing ejection seat aircraft aircrews and some FWNES aircrews.

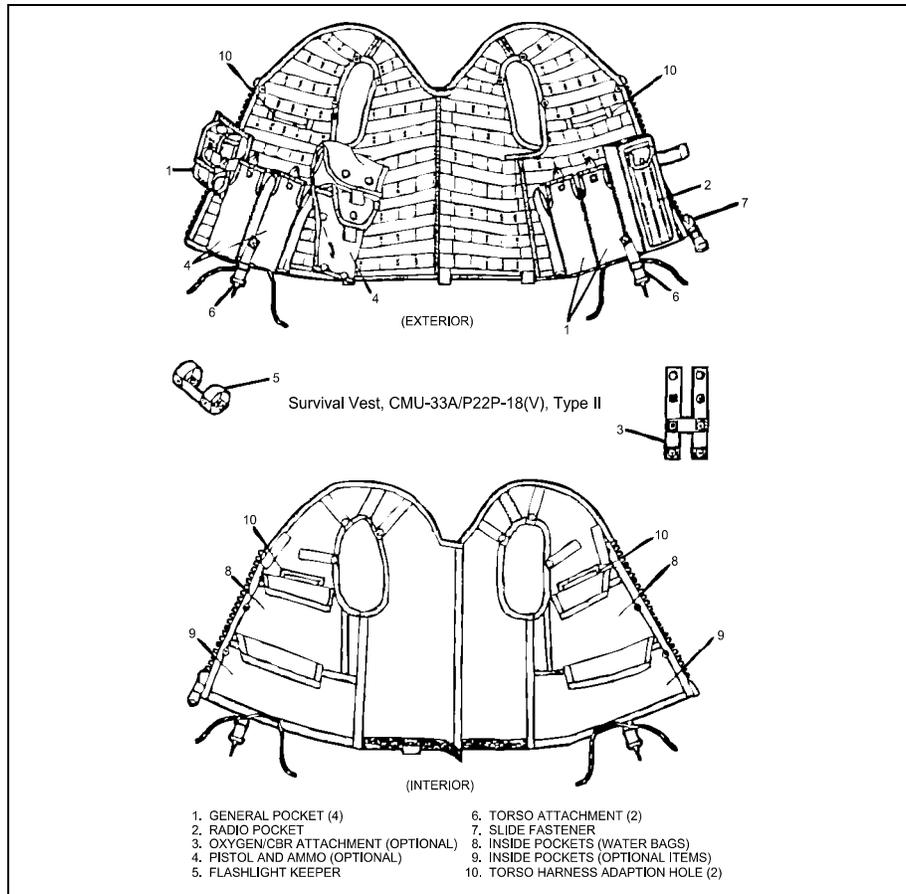


Figure 8-6. The Type II CMU-33A/P22P-18(V) Survival Vest

The Type II vest, used in ejection-seat aircraft, has a metal one-way slide fastener for increased air-blast protection in the event of seat ejection.

**Note**

The Type II vests come equipped with LPU-21/P and LPU-23/P collar lobe attachment straps, but are designed to be compatible with most Navy, Air Force, and Army life preserver assemblies.

**8.2.2.2 Application**

The Type II CMU-33A/P22P-18(V) survival vest is designed for use by all ejection seat, and some FWNES aircraft aircrews in conjunction with the aircrew armor assemblies and the integrated torso harness (types PCU-33/P and PCU-56/P).

**Note**

- The CMU-33/P22P-18(V) Type II will always be worn in conjunction with (over) an integrated torso harness, regardless of armor and life preserver configuration.
- The CMU-33/P22P-18(V) Type II may also be worn with only the soft armor, or as a survival vest without any armor.

### 8.2.3 SV-2B Survival Vest

The SV-2B survival vest is (Figure 8-7) used throughout the naval aviation and provides maximum useful storage for survival equipment, consistent with minimum bulk and weight. In addition, the survival vest provides for integration of a life preserver and the chest-mounted oxygen regulator. It does not interfere with the use of either the back pack or integrated-type parachute harness. The SV-2B is being replaced by the CMU-33 Type 1 and 2, but is still very common.

#### 8.2.3.1 Configuration

The SV-2B survival vest is constructed basically of nylon cloth. An adjustable harness, leg straps, and a front entrance slide fastener (zipper) provide a means of fitting and securing the vest to the aircrew member. The SV-2B has four major configurations: fighter/attack (F/A), nonejection seat land-based (NESLB), nonejection seat carrier-based (NESC), and helicopter (HELO). That being said, the general layout of the SV-2B remains the same. Fixed pockets are provided for stowage of survival items. When required, the chest-mounted oxygen regulator is located inside a pocket secured to the vest by means of hook-and-pile tape (except for S-3 and AV-8 series aircraft). For S-3 and AV-8 series aircraft, the oxygen regulator is mounted on a mounting bracket attached to the vest (see Figure 8-8).

#### Note

Compatible with soft and hard armor: PRU-60/P22P-15 or PRU-60A/P22P-15 and PRU-61/P22P-15 or PRU-61A/P22P-15. A locally manufactured chest-strap extension may be required to fit the SV-2B over the body armor.

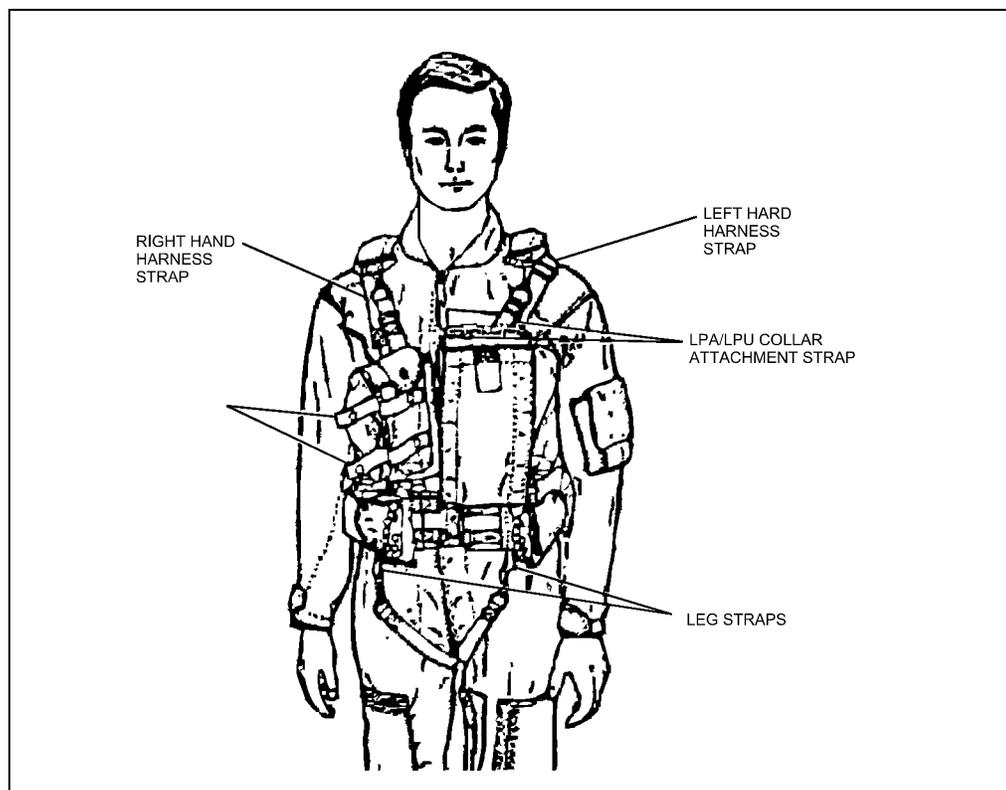


Figure 8-7. A Properly Worn SV-2B Survival Vest

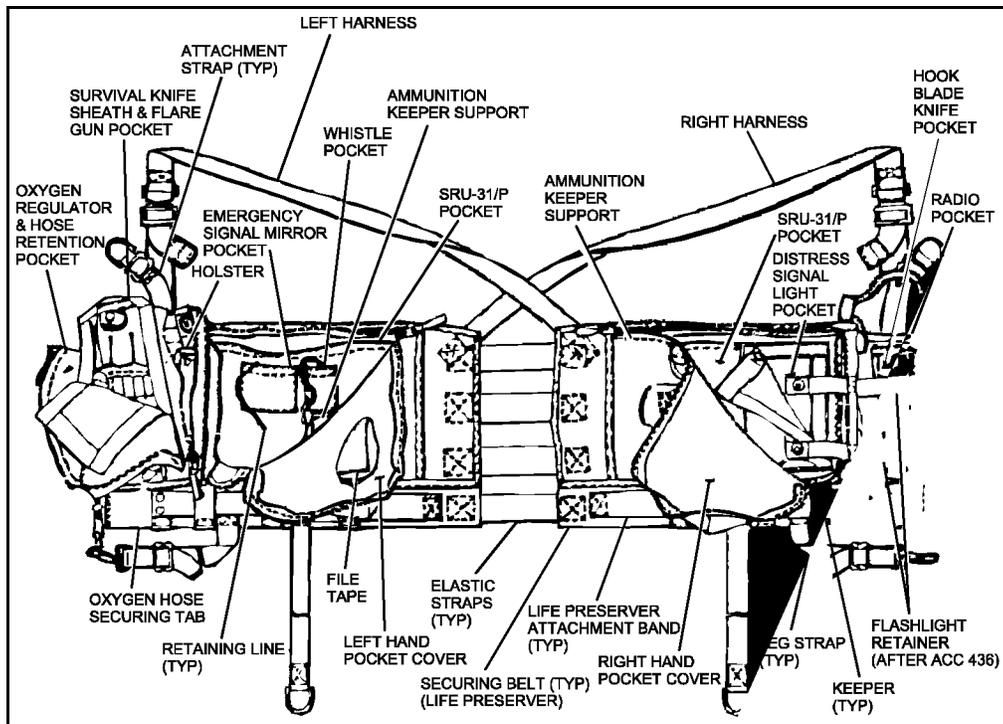


Figure 8-8. SV-2B Nomenclature

### 8.2.3.2 Application

The SV-2B is designed for use by all aircrew members. It can be worn by itself or over virtually any parachute harness in the inventory (if properly configured).

### 8.2.4 CMU-30/P22P-15 Survival Vest

The CMU-30/P22P-15 survival (Figure 8-9) vest is designed specifically for helicopter aircrews. It is being replaced by the CMU-33 Type I.

#### 8.2.4.1 Configuration

The survival equipment pockets are modular, so the location of survival items may be changed. The vest has a slide fastener (zipper) on the front. When the hard armor is worn in front, the slide fastener is engaged for no more than 2 inches and the armor release beaded pull handle is used as an alternate front closure.

#### Note

- Compatible Flotation: LPU-21/P
- Compatible with soft and hard armor: PRU-60/P22P-15 or PRU-60A/P22P-15 and PRU-61/P22P-15 or PRU-61A/P22P-15.

#### 8.2.4.2 Application

The CMU-30/P22P-15 is designed for use by helicopter aircrews in conjunction with the aircrew armor assembly when operating in hostile territory.

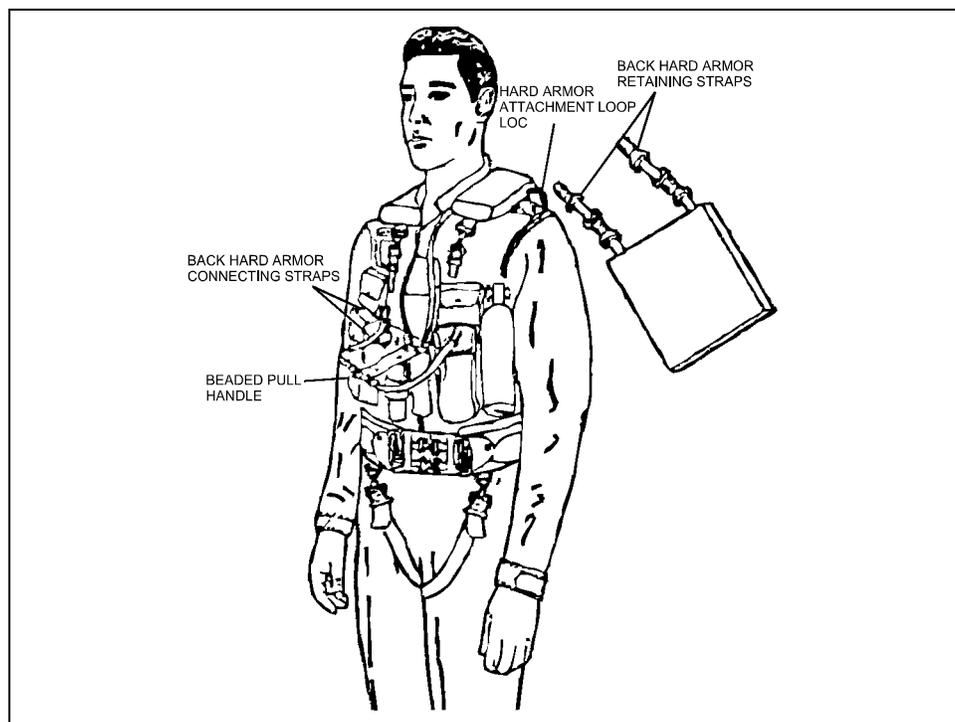


Figure 8-9. CMU-30/P22P-15 Survival Vest

**Note**

The CMU-30/P22P-15 may also be worn with only the soft armor or as a survival vest without any armor.

**8.3 PARACHUTE RESTRAINT HARNESS, PARACHUTE, AND ASSOCIATED EQUIPMENT**

**8.3.1 Quick Fitting Parachute Restraint Harness**

The quick fitting parachute restraint harness (Figure 8-10) is designed for aircrews of FWNES aircraft. The quick fitting parachute restraint harness has only one purpose: to connect a parachute to an aircrew member.

**8.3.1.1 Configuration**

The quick fitting harness consists mainly of nylon webbing. Three quick ejector fittings, one on the chest strap, and one on each leg strap, allow ease of donning and doffing the harness. Each shoulder riser has one parachute assembly attachment point. The quick fitting parachute restraint harness allows the use of either the back pack-type NB-8 personnel parachute assembly or the NC-3 chest pack personnel parachute assembly.

**8.3.1.2 Associated Parachute Assemblies**

1. The NB-8 personnel parachute assembly (Figure 8-11) is a back-type parachute consisting of a multicolored (white, olive green, international orange, and sand shade), 28-foot-diameter, flat, circular, nylon canopy with 28 gores. The canopy is packed in a container assembly and secured to the aviator's back by means of a quick fitting parachute restraint harness. It is by far the most popular parachute configuration for all land- and-carrier based nonejection seat aircraft (refer to Figure 8-1).

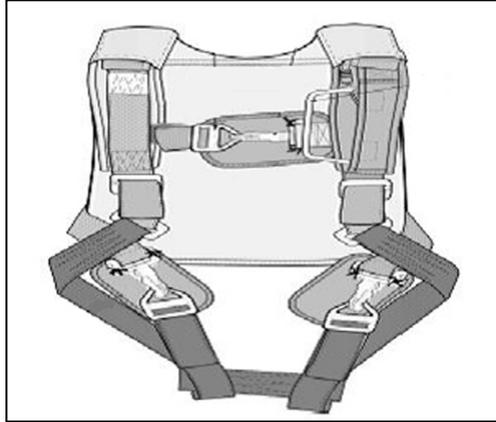


Figure 8-10. Quick Fitting Parachute Restraint Harness

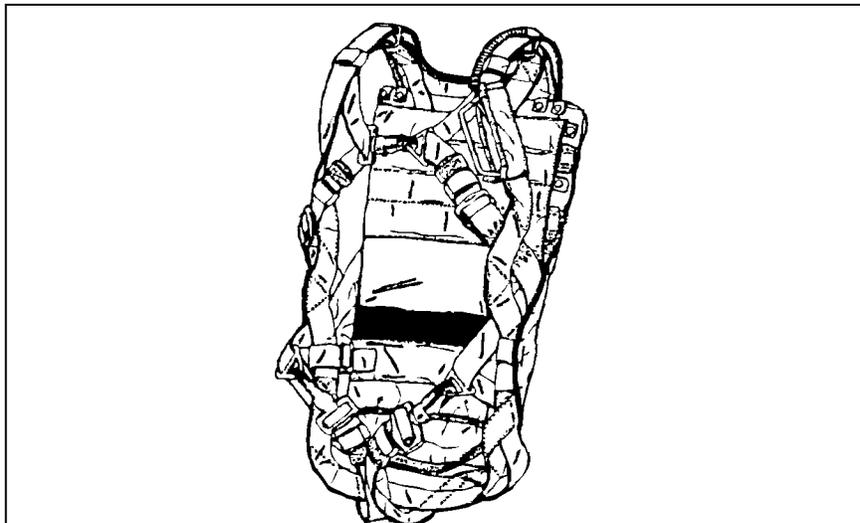


Figure 8-11. NB-8 Personnel Parachute Assemble (Back Pack)

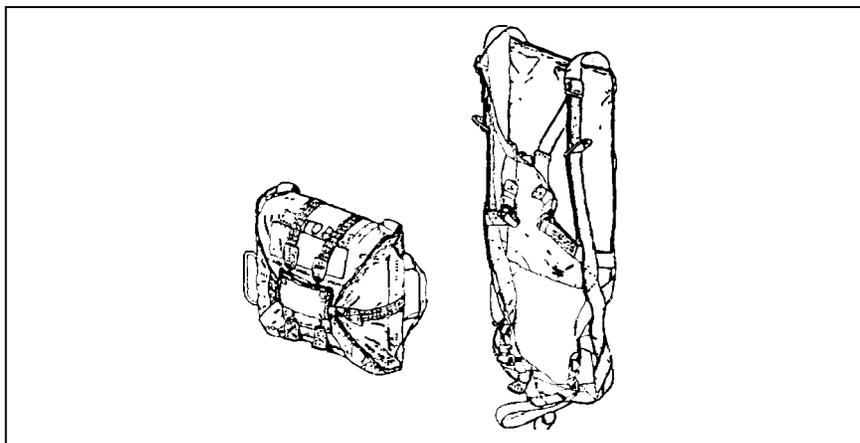


Figure 8-12. NC-3 Personnel Parachute Assemble (Chest Pack)

2. The NC-3 personnel parachute assembly (Figure 8-12) is a chest-type parachute used primarily in transport type aircraft. The NC-3 assembly includes a multicolored (white, olive green, international orange, and sand shade), 28-foot-diameter, flat, circular, nylon canopy with 28 gores. The canopy is packed in a container assembly secured to the aircrew's chest by means of a quick fitting parachute harness.

### 8.3.2 PCU-Series Integrated Torso Parachute Restraint Harness

#### 8.3.2.1 Configuration

The integrated torso harness comes in many different models, such as the PCU-33/P, PCU-51/P, and PCU-56/P (see Figure 8-13). Although there are many different model numbers, the general configuration and fittings are the same. Slight variances in the basic harness are given new model numbers for ease of procurement in the supply system. The PCU-series parachute restraint harness consists of nylon webbing encased in a nylon fabric channel, and is configured into a sleeveless, legless, torso garment closed by a slide fastener at the front. Main sling webbing straps with canopy release adapters provide attachment of parachute riser. A lap belt adapter provides attachment to ejection seat, survival seat kit, and parachute assembly. A gated D-Ring is attached to the right shoulder adjustable strap interweaved with a canopy release adapter.

#### 8.3.2.2 Associated Parachute Assembly

The NB-7 personnel parachute assembly (Figure 8-14) is a back pack-type parachute consisting of a multicolored (white, olive green, international orange, and sand shade), 28-foot-diameter, flat, circular, nylon canopy with 28 gores used with a PCU-series integrated torso parachute restraint harness. The canopy is packed in a container assembly and secured to the aviator's back by means of a PCU-series integrated torso parachute restraint harness. The parachute assembly is mated to a seat survival kit by a slide fastener and then installed in the aircraft seat. The integrated torso harness incorporates the parachute restraint harness and provides attachment points for the parachute assembly and survival kit. When aboard the aircraft and seated, the aviator connects the canopy release fittings on the parachute risers to the canopy release adapters (Koch fittings) on the harness.

Two different configurations for the NB-7 parachute assembly may be used. The difference is the addition or absence of the PHSRU discussed in Paragraph 8.3.3.

### 8.3.3 Parachute Harness Sensing Release Unit

The PHSRU (Figure 8-15) is a SEAWARS that provides a backup automatic mode of separating the parachute from the aircrew. Manually activating the canopy release assembly (Koch fitting) is the primary mode of separating the risers from the aircrew. Automatic release is intended for disabled aircrews or when there is insufficient time to manually activate the release. The PHSRU is designed to release within 2 seconds after seawater entry. Immersion in fresh water will not activate the PHSRU.

#### 8.3.3.1 Configuration

The SEAWARS consists of two PHSRUs, both fitted to each of the canopy release assemblies (Koch fittings) located on each shoulder riser.

#### 8.3.3.2 Principles of Operation

1. Manual operation: Upon landing, the aircrew disengages the parachute assembly from the PCU-33/P or the PCU-56/parachute restraint harness by actuating the canopy release assembly (Koch fitting) on each shoulder riser.

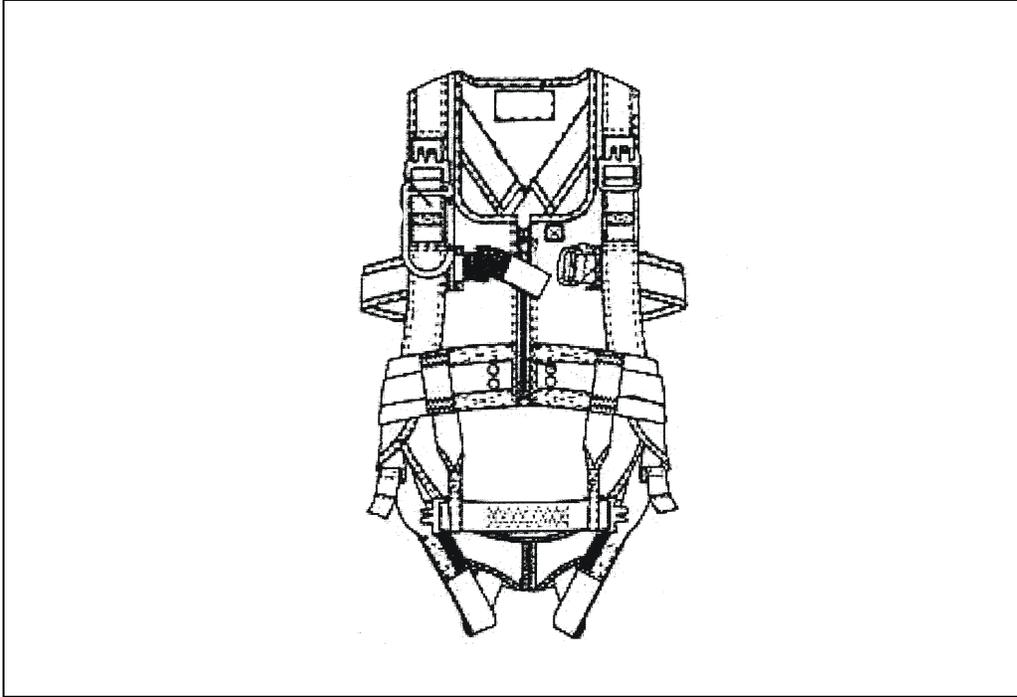


Figure 8-13. PCU-Series Integrated Torso Parachute Restraint Harness

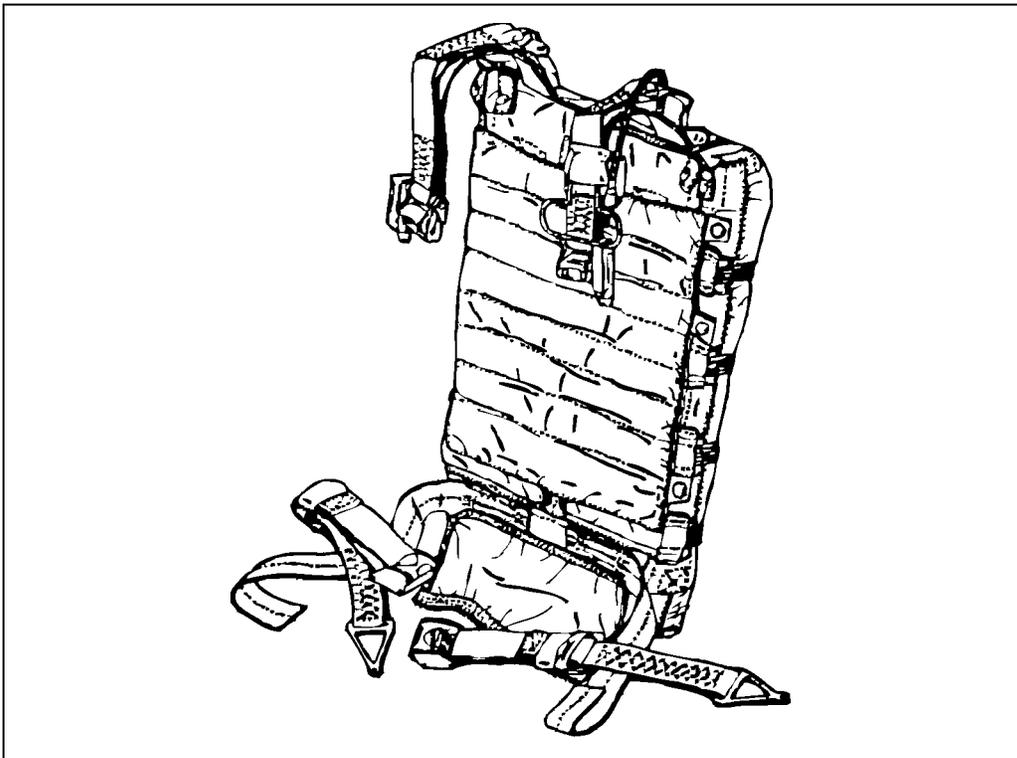


Figure 8-14. NB-7 Personnel Parachute Assembly

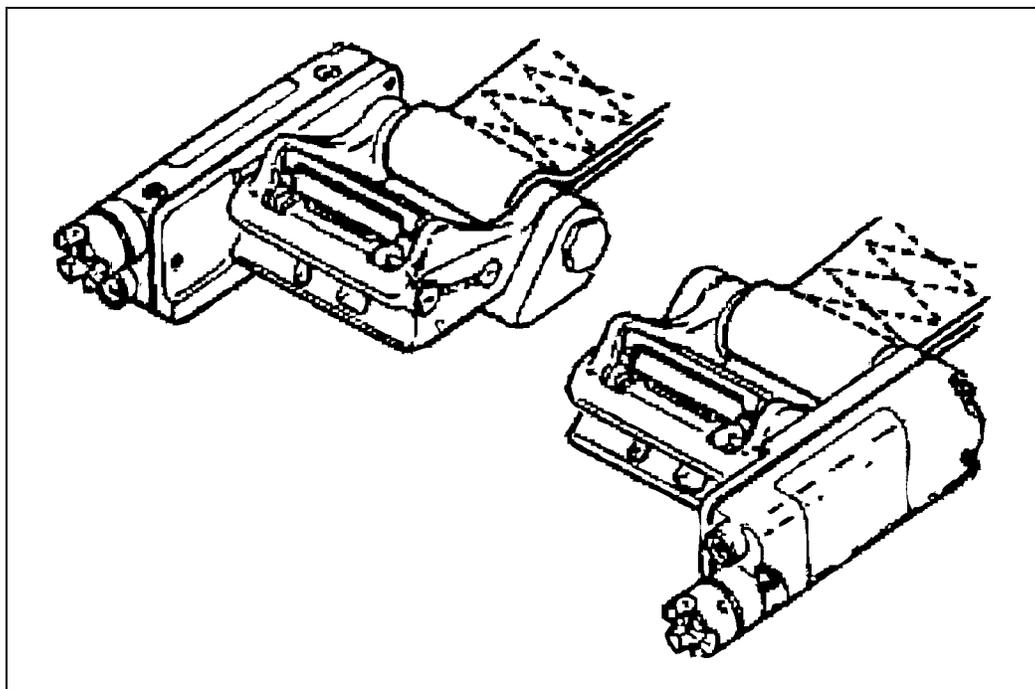


Figure 8-15. Parachute Harness Sensing Release Unit Attached to Koch Fitting of NB-7 Personal Parachute Assembly

2. Automatic operation: Within 2 seconds after the aircrew enters seawater, immersing the PHSRU, the following functions take place assuming the aircrew does not manually activate the canopy release assembly (Koch fitting):
  - a. An electron current path is established between the two sensors inside the PHSRU housing assembly.
  - b. The conductive path is sufficient in seawater to allow the firing capacitors within the EPA to charge to a predetermined voltage that will result in the capacitors discharging through the bridge wire within the explosive cartridge.
  - c. The release piston is driven by the gas released from the explosive cartridge compressing the plug assembly, thereby releasing the sleeve and the riser assembly.

**Note**

- The events described in Paragraphs 2a thru 2c above occur simultaneously.
- Fresh water or water of lesser conductivity will not fire the PHSRU.
- No harm will come to anyone touching the PHSRU when it fires. The PHSRU is totally enclosed and safe.
- The RS shall never assume the PHSRU will work: there have been cases in which one or both PHSRUs failed. Always approach the survivor being vigilant for a parachute.

### 8.3.3.3 Application

The SEAWARS system is utilized on the PCU-series integrated torso parachute restraint harness. Refer to Figure 8-1.

## 8.4 LIFE PRESERVER UNIT (LPU-SERIES)

The LPU-series life preserver has many different models, and though technically different, their general appearance and inflation procedures are the basically the same. For the purposes of this paragraph, all of the different models (see Figure 8-1 for model numbers) will be referred to as “LPU-series,” and any major differences will be noted.

### 8.4.1 LPU-Series Life Preservers Used by Aircrews of High-Performance Ejection Seat-Equipped Aircraft

#### Note

- The RS may encounter difficulty towing a survivor wearing the low-profile LPU-33/P LP and LPU-36/P LP due to its design. Hooking into the survivor’s gated D-Ring may overcome the problem.
- Due to its design, the low-profile LPU-33/P LP and LPU-36/P LP (Figure 8-16) beaded handles for manual inflation are in the chest area vice the hips as with non-low-profile life preservers (Figure 8-17). This is true of any low-profile (LP) life preserver.

The LPU-3 (T-38 only), LPU-10 (F-5 only), LPU-23 (series), LPU-33/P LP, and LPU-36/P LP life preserver assemblies are authorized for use by all aircrew operating in high-performance ejection-seat aircraft. The LPU-series life preservers are designed as a constant-wear item for use with either a modified integrated torso harness or a survival vest and will not interfere with the removal of the nonintegrated parachute harness. The LPU-series life preserver assembly ranges in weight from 3 1/4 to 4 pounds (without survival items) and provides a minimum of 65 pounds buoyancy.

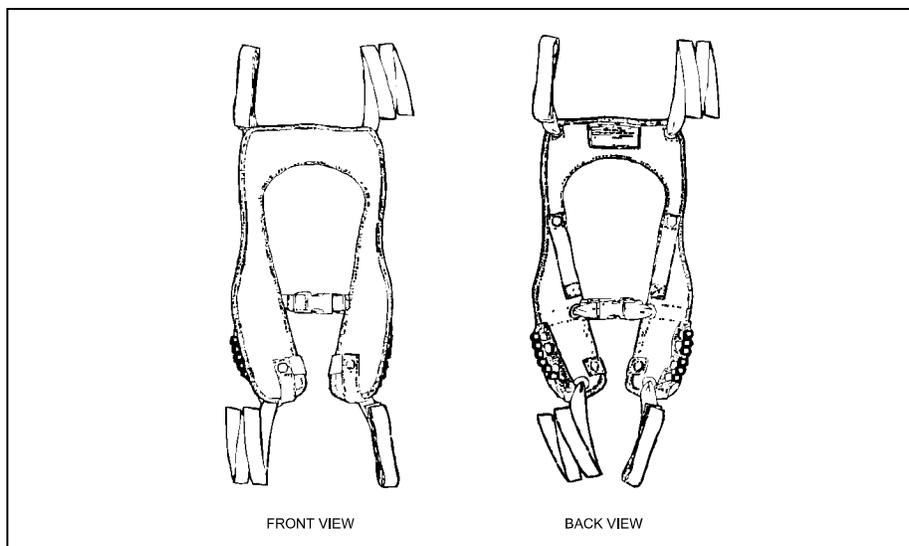


Figure 8-16. Low-Profile LPU

### 8.4.1.1 Configuration

The LPU-series consists of multiple components compactly packed into an exterior cover assembly. The flotation assembly consists of two independent flotation chambers. One chamber consists of the left waist lobe joined by a tube to the right collar lobe. This chamber contains one FLU-8B/P (automatic) and one beaded handle (manual) CO2 inflation assembly, and the oral inflation valve attached to the left waist lobe. The other chamber consists of the right waist lobe joined by a tube to the left collar lobe. This chamber also contains one FLU-8B/P (automatic) and one beaded handle (manual) CO2 inflation assembly, and the oral inflation valve attached to the right waist lobe. The two chambers are sewn together at the collar lobes. Four straps on the inflation shell assembly pass through grommets on the exterior cover assembly to attach the LPU-series life preserver to the modified integrated torso harness or survival vest. Two additional straps adjust a plastic buckle, which snaps across the wearer's chest to keep the LPU-series in position when worn. A beaded handle connects to an inflation device mounted on each side of the exterior cover assembly to initiate manual (primary) inflation of the life preserver.

### 8.4.1.2 Principles of Operation

The LPU-series is inflated either automatically by immersion in fresh or salt water, or manually by pulling both beaded handles. The bladders inflate to provide head-out-of-water buoyancy.

1. The primary method of initiating inflation is the manual mode: pulling both beaded handles in a natural downward motion. Each beaded handle is connected by a lanyard to the actuating lever of the inflation assembly. Pulling the beaded handles initiates zipper separation on the exterior cover and causes the CO2 cylinders to be punctured, inflating the bladders. The zipper securing the exterior cover continues to separate as the bladders inflate.
2. The automatic feature of the FLU-8B/P inflator serves as a backup to manual inflation. Automatic inflation is initiated when immersion in fresh or salt water activates an electronic circuit within the device to detonate an explosive primer (cartridge). Energy from the burning explosive forces the spent-cartridge indicator into the firing check port and simultaneously propels the piercing pin to puncture the CO2 cylinder, inflating the bladder. The zipper securing the exterior cover separates as the bladder inflates.

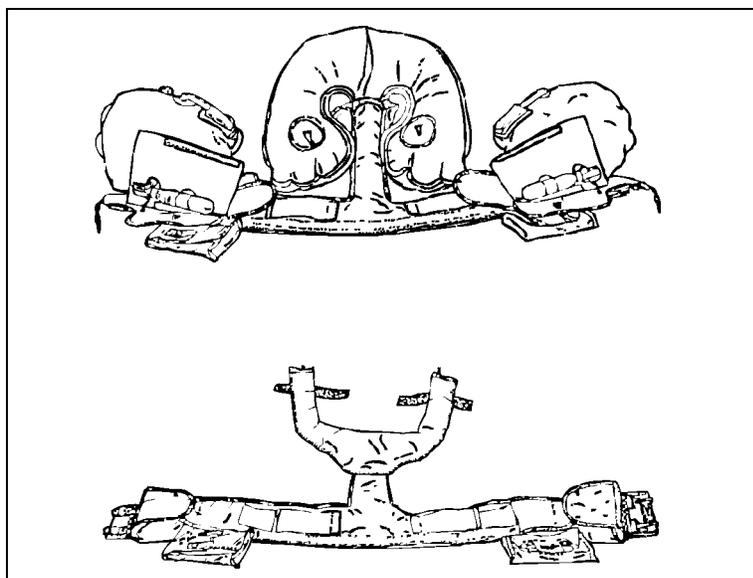


Figure 8-17. Non-Low-Profile LPU

3. In an emergency situation, the oral inflation tubes may be used to top off the inflated bladders, maintain inflation of a leaky bladder, or inflate a bladder if an inflator malfunctions. The oral inflation tubes may also be used to evacuate air.

### 8.4.1.3 Application

Refer to Figure 8-1 for specific model LPU-series applications.

## 8.4.2 LPU-Series Life Preservers Used in Fixed-Wing Nonejection-Seat Aircraft and Helicopters

### Note

- The RS may encounter difficulty towing a survivor wearing the low-profile LPU-34/P LP and LPU-35/P LP due to its design. Hooking into the survivor's gated D-Ring may overcome the problem.
- The RS may be reminded that due to its design, the low-profile LPU-34/P LP and LPU-35/P LP (Figure 8-16) beaded handles for manual inflation are in the chest area vice the hips as with non-LP life preservers (Figure 8-17). This is true of any LP life preserver.
- LPU-series life preservers used in nonejection-seat aircraft and helicopters **do not** have the FLU-8B/P automatic inflation assembly discussed in Paragraph 8.4.3.

The LPU-10, LPU-21 (series), LPU-34/P LP, and LPU-35/P LP life preserver assemblies are authorized for use by all aircrew operating in nonejection-seat aircraft and helicopters. The LPU-series life preservers are designed as a constant-wear item for use with either a modified integrated torso harness or a survival vest and will not interfere with the removal of the nonintegrated parachute harness. The LPU-series life preserver assembly ranges in weight from 3-1/4 to 4 pounds (without survival items) and provides a minimum of 65 pounds buoyancy.

### 8.4.2.1 Configuration

The LPU-series consists of multiple components compactly packed into an exterior cover assembly. The flotation assembly consists of two independent flotation chambers. One chamber consists of the left waist lobe joined by a tube to the right collar lobe. This chamber contains one beaded handle (manual) CO<sub>2</sub> inflation assembly and the oral inflation valve attached to the left waist lobe. The other chamber consists of the right waist lobe joined by a tube to the left collar lobe. This chamber also contains one beaded handle (manual) CO<sub>2</sub> inflation assembly and the oral inflation valve attached to the right waist lobe. The two chambers are sewn together at the collar lobes. Four straps on the inflation shell assembly pass through grommets on the exterior cover assembly to attach the LPU-series life preserver to the modified integrated torso harness or survival vest. Two additional straps adjust a plastic buckle, which snaps across the wearer's chest to keep the LPU-series in position when worn. A beaded handle connects to an inflation device mounted on each side of the exterior cover assembly to initiate manual (primary) inflation of the life preserver.

### 8.4.2.2 Principles of Operation

The LPU-series life preserver used in FWNES aircraft and helicopters can only be inflated manually. The LPU-series is inflated manually by pulling both beaded handles. The bladders inflate to provide head-out-of-water buoyancy.

1. The primary method of initiating inflation is the manual mode: pulling both beaded handles in a natural downward motion. Each beaded handle is connected by a lanyard to the actuating lever of the inflation assembly. Pulling the beaded handles initiates zipper separation on the exterior cover and causes the CO<sub>2</sub> cylinders to be punctured, inflating the bladders. The zipper securing the exterior cover continues to separate as the bladders inflate.

2. In an emergency situation, the oral inflation tubes may be used to top off the inflated bladders, maintain inflation of a leaky bladder, or inflate a bladder if an inflator malfunctions. The oral inflation tubes may also be used to evacuate air.

**Note**

The exterior cover must be manually opened prior to attempting to inflate the bladders using the oral inflation tubes.

**8.4.2.3 Application**

Refer to Figure 8-1 for the type LPU used in USN nonejection seat aircraft and helicopters.

**8.4.3 FLU-8B/P Automatic Inflation Device**

The FLU-8B/P (Figure 8-18) is a water-activated inflation system that provides a backup automatic mode of inflating a life preserver unit for disabled aviators in high-performance ejection seat–equipped aircraft and shipboard personnel so equipped.

**8.4.3.1 Configuration**

The FLU-8B/P is a sealed cartridge actuated device installed on the valve stem of each waist lobe of the floatation assembly. A manifold nut secures the device and upper and lower pressure seal gaskets on the valve stem and serves as a cover for the valve stem. Each FLU-8B/P contains:

1. Sensor housing, which contains an electronic circuit, two 6-volt manganese dioxide batteries, and a sensor plug assembly containing the battery contact spring and sensor pin

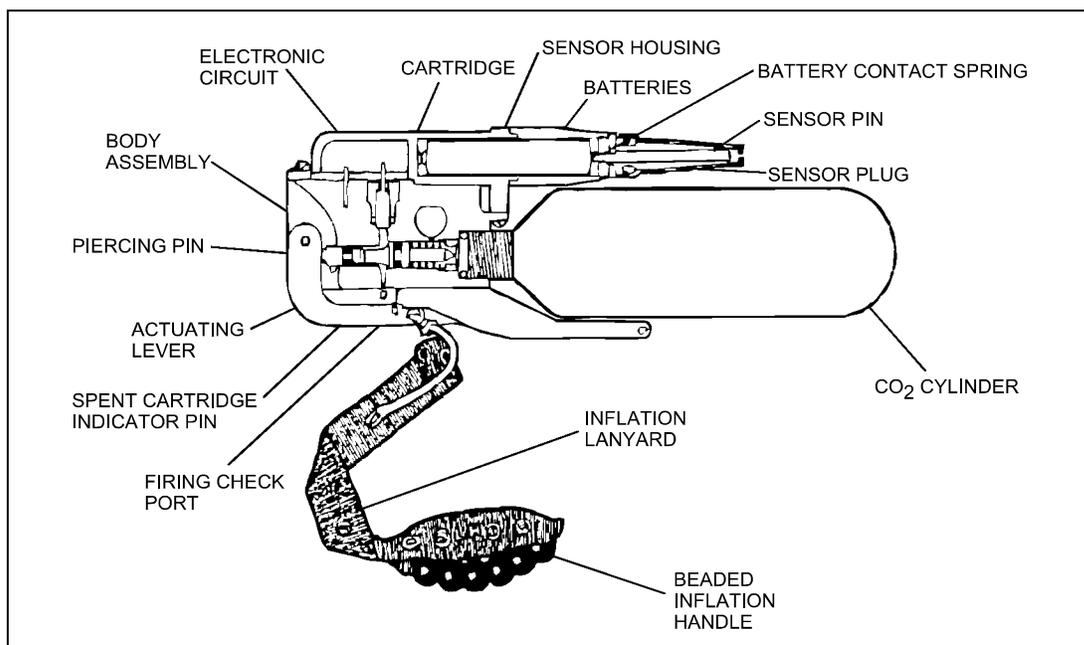


Figure 8-18. LPU Inflation Assembly with FLU-8B/P Installed

2. Body housing, which contains a cartridge, piercing pin, spent-cartridge indicator, firing check port, cam lever, lanyard assembly, nylon release pin and provisions to attach a Type III, 35 gram CO2 cylinder.

**8.4.3.2 Principles of Operation**

The FLU-8B/P may be operated either manually or automatically.

1. The manual mode is considered the primary mode. Can be actuated an unlimited amount of times.
2. Automatic inflation of the LPU is initiated when immersed in fresh or salt water. Automatic mode is a one-time-use feature.

**8.4.3.3 Application**

The FLU-8B/P system is used in all life preservers configured for use with ejection-seat aircraft. Additionally, most shipboard personnel personal flotation assemblies now utilize the FLU-8B/P system.

**8.5 RIGID SEAT SURVIVAL KIT**

**Note**

- All rigid seat survival kits (Figure 8-19) look essentially the same and have the same basic equipment installed.
- RSSKs are installed in all high-performance aircraft that utilize ejection seats. The RSSK functions as a seat for the aircrew member, as well as a platform and/or case for mounting emergency oxygen and other survival equipment.

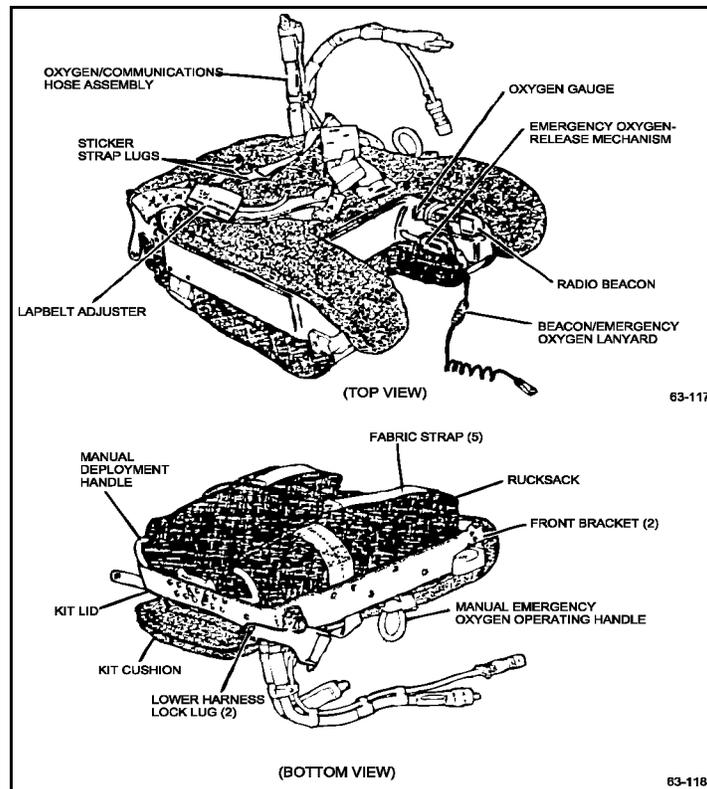


Figure 8-19. Example of a Rigid Seat Survival Kit

### 8.5.1 Configuration

1. The molded fiberglass seat lid assembly is the primary structure of the RSSK (Figure 8-20). It serves as a seat for the aircrewman as well as a mounting platform for the universal radio/transceiver (URT) radio beacon, the rucksack assembly, and the emergency oxygen system. Two lap belts are attached to the lid assembly at the aft outboard edges and are fitted with release assemblies, which are attached to the aircrewman's parachute harness.
2. A flexible oxygen and communications hose assembly, which consists of two hose subassemblies, is installed on the side of the lid assembly. The first subassembly provides connection for communication and oxygen services between the aircraft console, through the ejection seat survival kit, to a quick disconnect union at the end of the subassembly. The second subassembly provides the interconnection between the quick disconnect and the aircrewman's chest-mounted breathing oxygen regulator. Anti-g and vent air are provided directly to the aircrewman from the aircraft console.
3. The emergency oxygen system provides ejected aircrew with up to 10 minutes of air in the event that ejection occurs above 10,000 feet.
4. The fabric rucksack container is divided into two compartments. The larger compartment at the rear of the rucksack houses a life raft. The front compartment contains basic survival items (Figure 8-21), and is closed by a zipper.

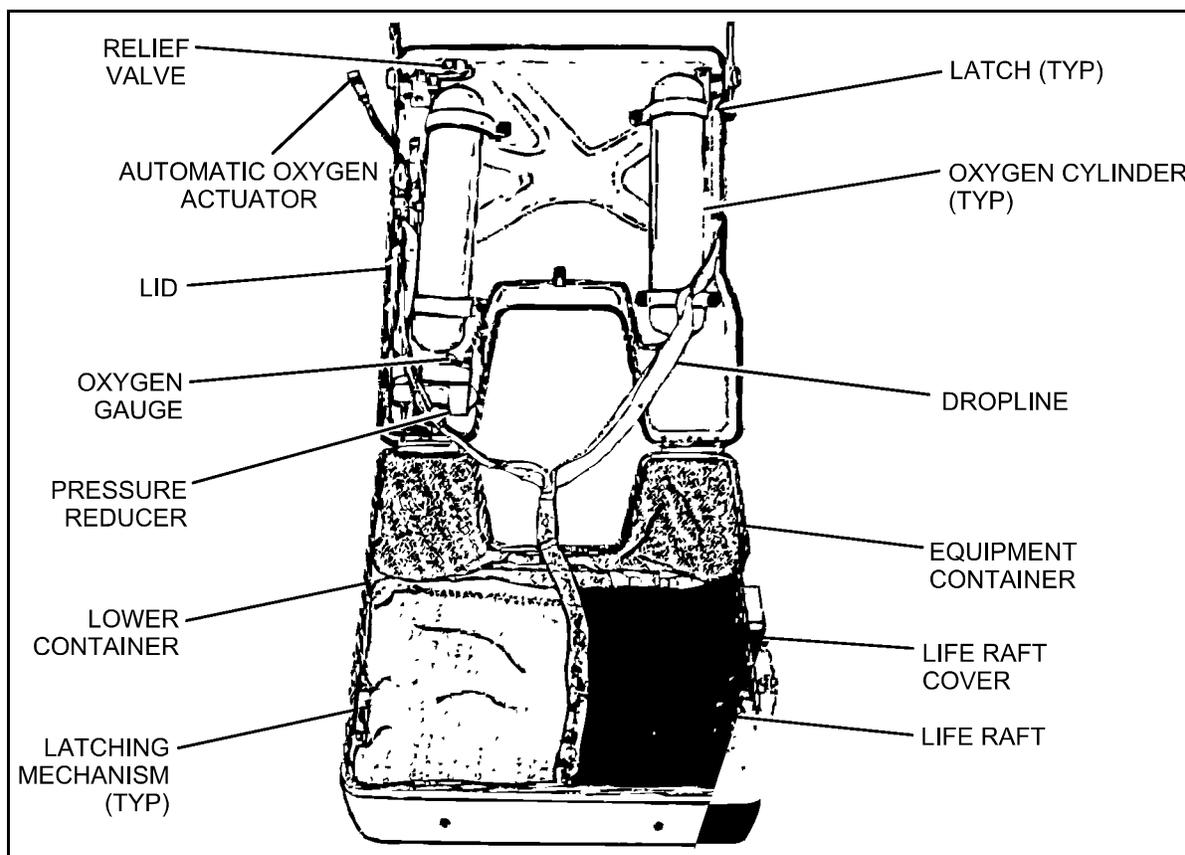


Figure 8-20. A Typical RSSK Opened (Layout May Vary Slightly From Model to Model)

Nomenclature	Quantity	Reference Number
Ground/Air Emergency Code Card	1	NAVAIR 13-1-6.5
Nylon Cord, Type 1	50 ft	NAVAIR 13-1-6.5
Bailing Sponge, Type 2, Class 2	1	NAVAIR 13-1-6.5
Combat Casualty Blanket	1	NAVAIR 13-1-6.5
SRU-31/P Survival Kit, Packet No. 1 (Medical)	1	NAVAIR 13-1-6.5
(Note 2)		
SRU-31/P Survival Kit, Packet 2 (General)	1	NAVAIR 13-1-6.5
(Note 2)		
SRU-31 A/P (Note 6)	Optional	NAVAIR 13-1-6.5
Radio Beacon	1	NAVAIR 13-1-6.5
Bag, Drinking Water (50 ml) (Note 4)	6	NAVAIR 13-1-6.5
or		
Water, Drinking Emergency (118 ml) (Note 4)	3	NAVAIR 13-1-6.5
Smoke and Illumination Signal	2	NAVAIR 13-1-6.5
(MK 13 MOD 0 or MK 124 MOD 0)		
Sea Dye Marker	2	NAVAIR 13-1-6.5
Latex Surgical Tubing	5 ft	NAVAIR 13-1-6.5
Green Lightstick, 12 hour (Note 3)	2	NAVAIR 13-1-6.5
S.O.S. Light, Green, 8 hour (Note 3)	2	NAVAIR 13-1-6.5
HGU-32/P Antiexposure Hood (Note 5)	1	NAVAIR 13-1-6.5
HAU-12/P Antiexposure Mittens (Note 5)	1 pr	NAVAIR 13-1-6.5

Notes: 1. The items listed are typical and are considered mandatory for inclusion in the survival kit container. Deviation from the listed items may be required by certain functional air wings (FUNCWINGS), carrier air wings (CVW), COMFAIRS, or marine air wings (MAW). Requests for deviations must be forwarded to and authorized by TYCOMS and with information to fleet support team (FST) at NAVAIRWARCENACDIV, Patuxent River, MD via naval message. When optional items are substituted, particular attention must be made to the binding sequence so that physical sizes and binding order of substituted items remain approximately the same. That portion of an item name in parentheses is a common-use name or container size and is not intended for supply requisition purposes.

2. SRU-31/P complete kit consisting of both the medical packet (#1) and general packet (#2) may be ordered; instructions for packing and ordering these kits are found in NAVAIR 13-1-6.5.

3. Replace green lightstick, 12 hour, with S.O.S. light green, 8 hour, at Seat Survival Kit's next inspection cycle, reference NAVAIR 13-1-6.5 for NIINs.

4. If bag, drinking water (50 ml), substitute water, drinking emergency (118 ml), in accordance with NAVAIR 13-1-6.5.

5. Not required to be packed if available from supply.

6. The selection of SRU-31/P or SRU-31A/P Individual Aircrewmember's Survival Kit will be at the discretion of the TYPE COMMANDER depending on mission requirements, reference NAVAIR 13-1-6.5, Chapter 9, for detailed information.

Figure 8-21. A Typical List of RSSK Survival Items (Items May Vary Slightly From Model to Model)

## 8.6 INFLATABLE LIFE RAFTS

### Note

The CNO has established new survival equipment lists (Figure 8-24) as standards to be utilized by all concerned. These lists provide for an effective 24-hour survival capability. Please refer to the NA 13-1-6.1-1 for additional information on all life rafts.

### 8.6.1 LR-1 One-Man Life Raft Assembly

The LR-1 is a one-man life raft (Figure 8-22) utilized with various soft- and hard-type survival kits, and is the most widely used life raft in the fleet. The LR-1 is intended for use by an aircrew member forced down at sea. It can also be used as a shelter when forced down over land, or to ford streams, lakes, and rivers.

#### 8.6.1.1 LR-1 Configuration

The LR-1 life raft assembly consists of an inflation assembly (CO2 cylinder and inflation valve), and a one-man life raft. Three types of CO2 cylinders and one type of inflation valve, FLU-6/P or modified FLU-6/P, are available. The life raft consists of a single compartment flotation tube with a noninflatable floor. It features a weather shield, sea anchor, sea anchor pocket, retaining line pocket, and ballast bags.

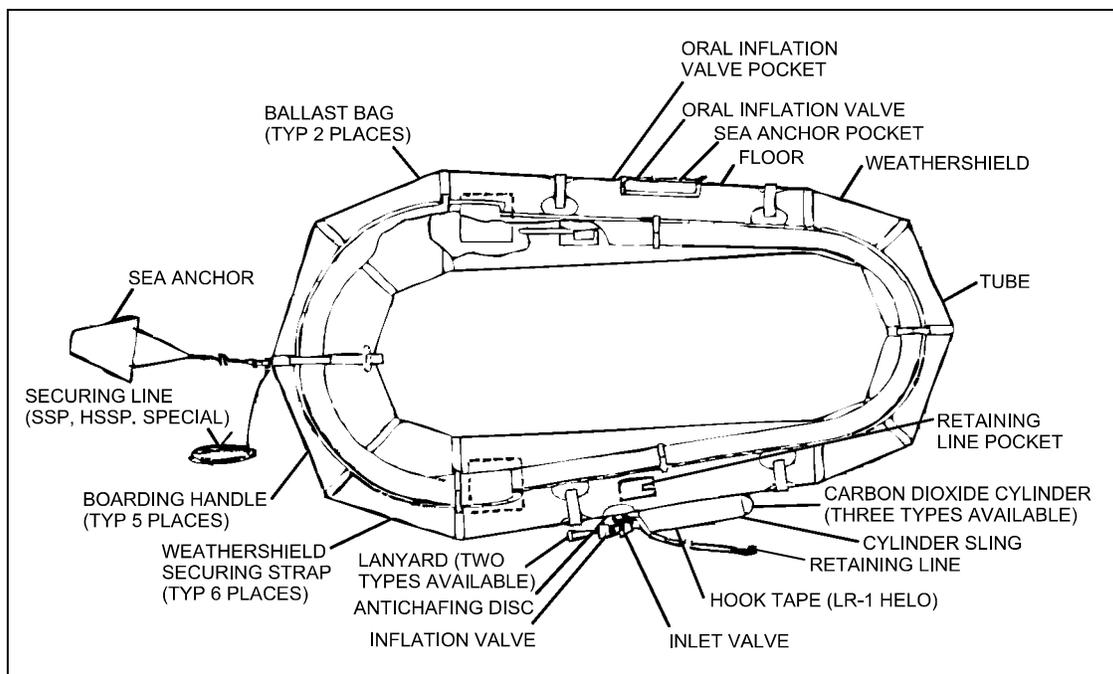


Figure 8-22. Inflated LR-1 One-Man Life Raft Assembly

### 8.6.1.2 LR-1 Function

The LR-1 life raft assembly is inflated either manually by pulling the inflation assembly-actuating lanyard or automatically on LR-1 RSSK by gravity drop on kit actuation. The inflation assembly inflates the flotation tube. After boarding, the LR-1 may be topped off by using the oral inflation valve (see Figures 8-23 and 8-25).

### 8.6.2 LRU-18/U Life Raft Assembly

The LRU-18/U is a one-man life raft (Figure 8-26) utilized with various soft- and hard-type survival kits. It is intended for use by aircrew members forced down at sea. It can also be used as a shelter when forced down over land, or to ford streams, lakes, and rivers. It is a lightweight life raft designed to replace the bulkier and heavier LR-1 in certain applications.

#### 8.6.2.1 LRU-18/U Configuration

The LRU-18/U life raft assembly consists of a one-man life raft and an inflation assembly (CO<sub>2</sub> cylinder and inflation valve). It has two separate cells, each consisting of a series of tubes. The upper second, third, and fourth tubes are inflated with CO<sub>2</sub>, and the remaining tubes are inflated orally (Figures 8-27 and 8-28).

#### 8.6.2.2 LRU-18/U Function

The LRU-18/U life raft assembly is inflated manually by pulling the beaded inflation handle, which actuates the CO<sub>2</sub> inflation assembly. The inflation assembly inflates the upper second, third, and fourth tubes. After boarding, additional buoyancy and free board may be added by orally inflating the remaining tubes through the oral-cell oral inflation valve.

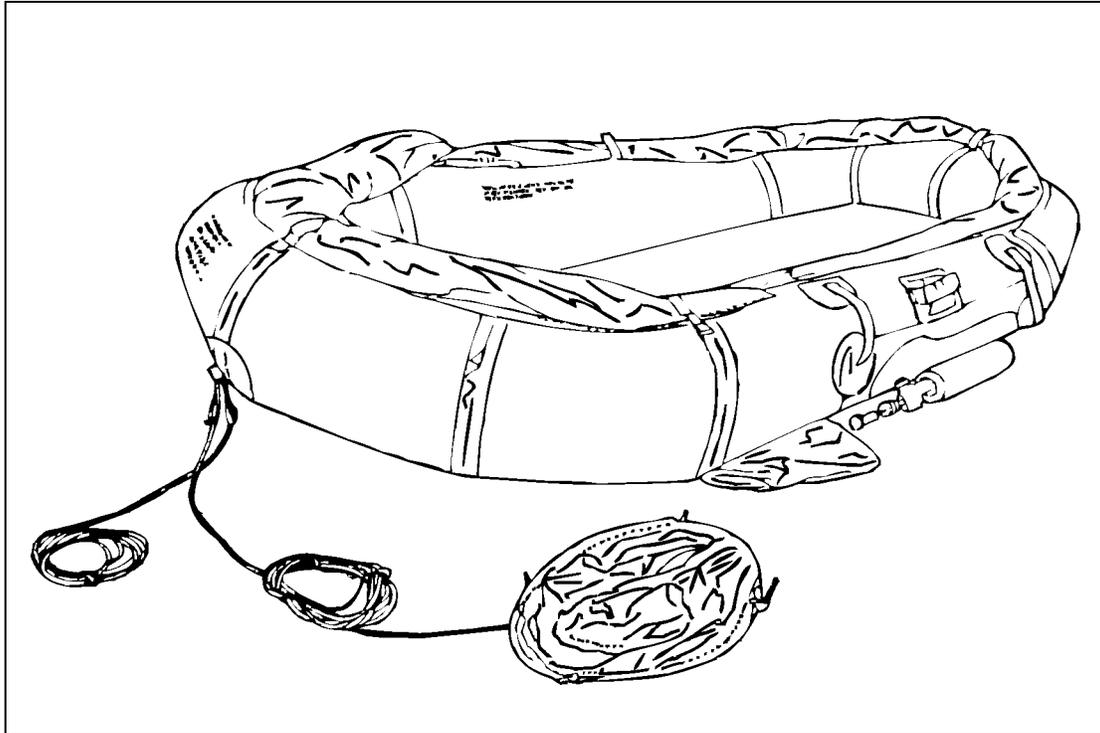


Figure 8-23. LR-1 Nomenclature

Description	Quantity Required	Reference Number	NIIN	SM&R Code
Dye Marker	2	MIL-S-17980	00-270-9986	PAOZZ
Distress Signal, MK-124 MOD 0	2	—	01-030-8330	
Emergency Radio Beacon AN/URT-33A	1	MIL-B-38401A	00-160-2136	PAOGG
Battery Power Supply (Note 3)	1	P/N A3-03-0052 (CAGE 18560)	00-168-8628	PAOZZ
Water, Drinking, Bagged. Emergency (Note 2)	3		01-124-4543	PAOZZ
Cord, Nylon, Utility, 50 feet	1	MIL-C-5040	00-262-2148	PAOZZ
SRU-31/P Individual Survival Kit (Part 1 – Medical, Part 2 – General)	1	MIL-S-81941	00-478-6504	PCOZZ
Ground Air Emergency Code Manual	1	NAVAIR 00-25-213	0800-LP-000-1500	—
Combat Casualty Blanket Type II, 3 oz.	1	MIL-B-36964	00-935-6666	PAOZZ
Bailing Sponge	1	P/N L-S-626 (CAGE 81348)	00-240-2555	PAOZZ
Personnel Lowering Device (Note 1)	1	CL 213D2-1	00-451-3324	
Notes:	1. Optional item. 2. Deleted. 3. Refer to NAVAIR 16-30URT33-1 for battery service life.			

Figure 8-24. LR-1 Survival Items

Packaged LR-1 Life-Raft Assembly	Aircraft		
Standard Soft Pack Assembly (Note 1)	E-2A E-2B	T-34B	KC-130R
High-Speed Soft Pack Assembly	A-4C A-4E	KC-130R	
High-Speed Soft Pack (Modified) Assembly			
Rigid Seat Survival Kit 1/1A	F-4J	F-4M	RF-4B
Rigid Seat Survival Kit 3			
Rigid Seat Survival Kit 8/8A	A-4M A-7C	A-7A TA-4F	S-3A A-7B
Helicopter Back Pack Assembly (Note 2)	All Helicopters (except AH-1 series)		
SKU-2/A	KA-6D	EA-6A	
SKU-3/A			
SKU-4/A			
SKU-6/A  SKU-12/A (Note 3)	A-6E KA-6D	EA-6A EA-6B	F-14
<p>NOTE: 1. E-2 aircraft equipped with the A/P22P-11 crew back pack utilize the LRU-18/U one-man Vee Bottom Lifeboat.</p> <p>2. LR-1 Life Rafts will be replaced with LRU-18/U one-man Vee Bottom Life Raft in helicopter back pack assemblies on an additional basis.</p> <p>3. The LRU-23/P liferaft assembly is installed in seat survival kits used in F-14 and F/A-18 aircraft equipped with SJU-17(v)1A through SJU-17(V)4A ejection seats.</p>			

Figure 8-25. LR-1 Applications

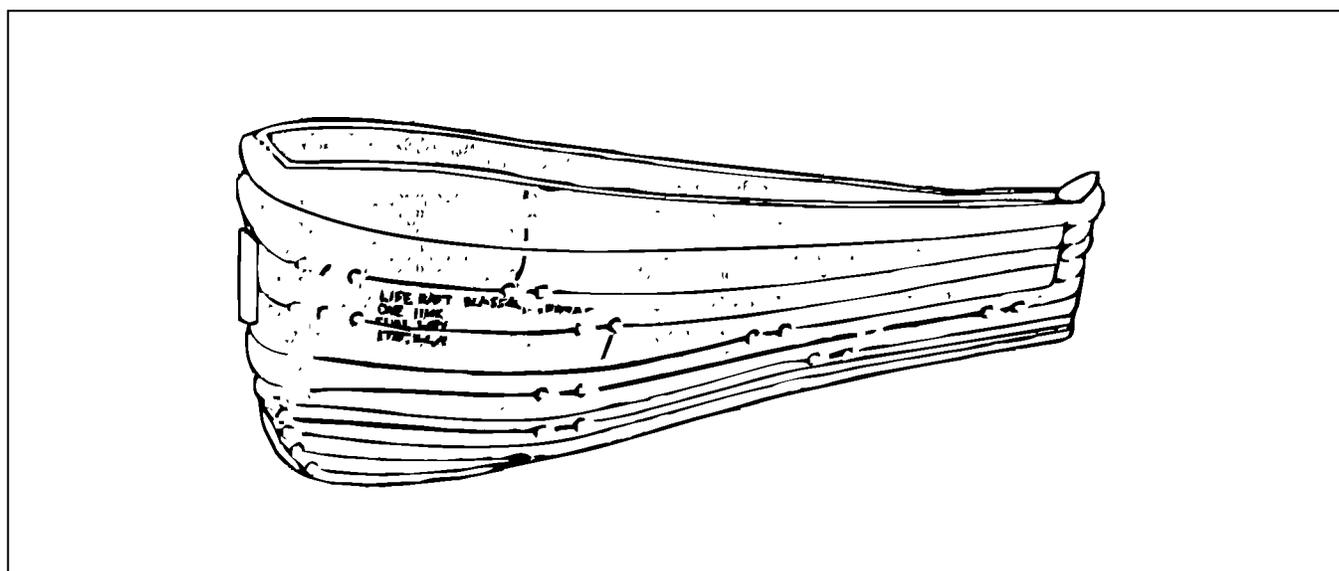


Figure 8-26. LRU-18/U Life Raft Assembly

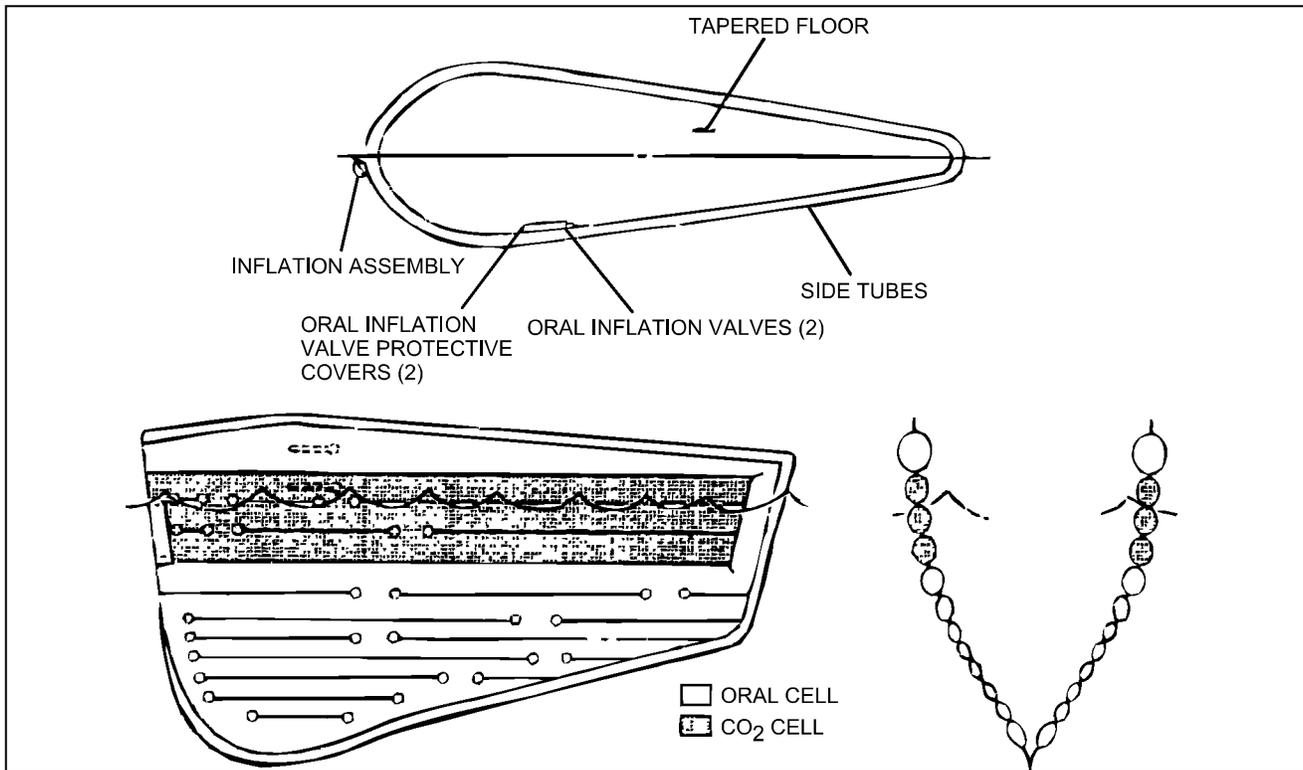


Figure 8-27. LRU-18/U Life Raft Assembly Nomenclature

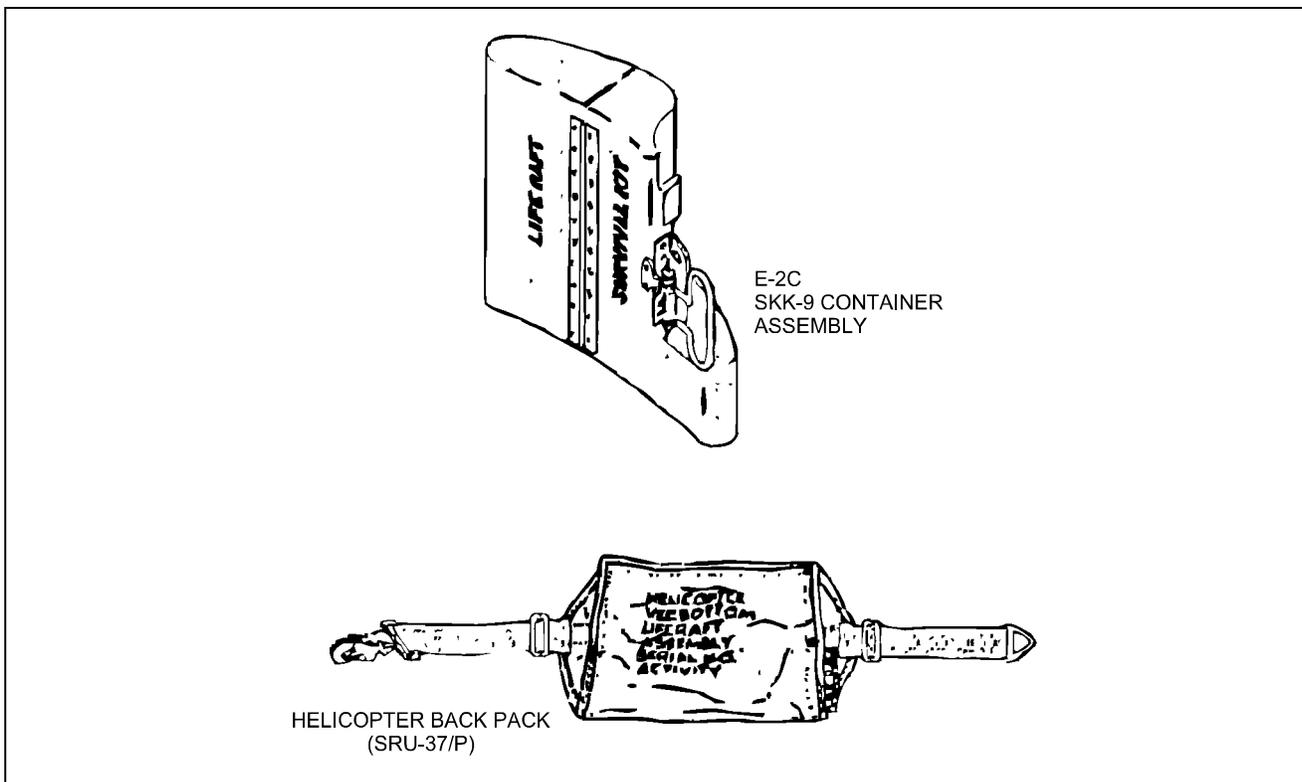


Figure 8-28. Packaged LRU-18/U Life Raft Assemblies

**8.6.2.3 LRU-18/U Application**

The LRU-18/U life raft assembly is mandatory for use by all authorized helicopter and E-2C aircrew during over-water flights (Figure 8-29).

**8.6.3 LRU-23/P Life Raft Assembly**

The LRU-23/P life raft assembly (Figures 8-30 and 8-31) is a one-man life raft utilized in individual seat survival kits. The LRU-23/P is intended for use by an aircrew member forced down at sea, providing insulation against low air and sea temperatures. It can also be used as a shelter when forced down over land, or to ford streams, lakes, and rivers.

**8.6.3.1 LRU-23/P Configuration**

The three main components of the life raft are the flotation chamber, double-layer floor, and double-layer canopy.

**8.6.3.2 LRU-23/P Function**

If the survival kit deployment is manually actuated during parachute descent, the rucksack will fall away, extracting the life raft and drop-line. When the life raft reaches the end of free-fall, the initial line stretch snubbing action will actuate the life raft's CO2 inflation assembly. The rucksack containing the basic survival items will be suspended below the inflated life raft, and act as a sway stabilizer during descent.

On entering the water, the life raft retaining lanyard is removed from its stowage pocket on the raft and attached to a D-Ring on the survivor's life preserver. After removing survival radio, the seat kit lid is then released, the life raft is boarded from the stern using boarding handles, and the rucksack is retrieved.

If the survival kit is retained until after water entry, actuation of the manual deployment handle on the seat kit will release the rucksack. The life raft may then be inflated by manually pulling on the drop-line attached to the raft CO2 inflation assembly.

**8.6.3.3 LRU-23/P Application**

The LRU-23/P Life Raft Assembly is installed in seat survival kits used in F-14, F/A-18, and T-45 aircraft equipped with SJU-17(V)1/A through SJU-17(V)6/A ejection seats. Refer to NAVAIR 13-1-6.3-2 for details of application.

Packaged LRU-18 Life Raft Assembly	Aircraft
SRU-37/P One-Man Vee-Bottom Life Raft and Container Assembly (Helicopter Back Pack)	All Helicopters
SKK-9 One-Man Vee Bottom Life Raft and Survival Kit Container Assembly	E-2C (Aircraft Equipped with A/P22P-11 Crew Back Pack)

Figure 8-29. LRU-18/P Aircraft Applications

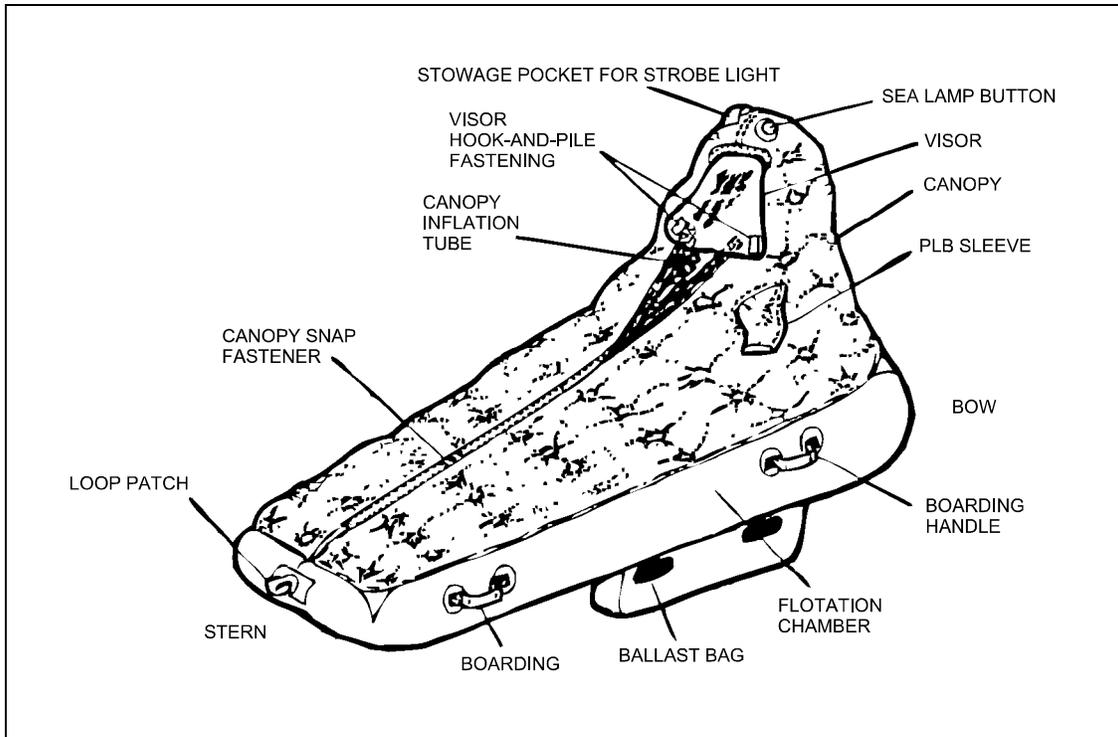


Figure 8-30. LRU-23/P Life Raft Assembly

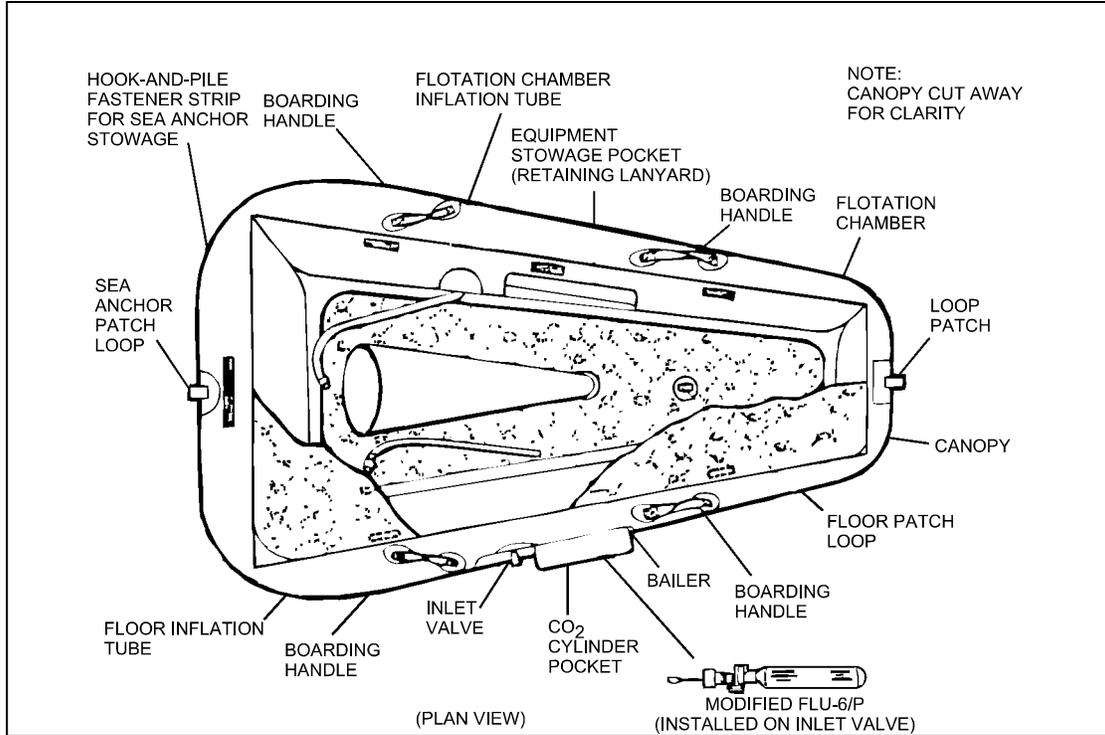


Figure 8-31. LRU-23/P Life Raft Assembly Nomenclature

#### **8.6.4 LRU-29/P22P-20 Sealed Life Raft Assembly**

The LRU-29/P22P-20 sealed life raft assembly (Figure 8-32) is a vacuum-packaged one-person life raft utilized in the A/P22P-20 crew back pack assembly. It is intended for use by an aircrew member forced down at sea. It can also be used as a shelter when forced down over land, or to ford streams, lakes, and rivers.

##### **8.6.4.1 LRU-29/P22P-20 Configuration**

The LRU-29/P22P-20 sealed life raft assembly is a vacuum-packaged LRU-16/P. The raft is redesignated after vacuum packaging by the manufacturer of the A/P22P-20 crew back pack assembly. It consists of a FLU-10 zero leak inflator and a one-person life raft. The life raft comes with an inflatable floor and weather shield for insulation from the elements. The life raft is stowed in the SRU-41/P22P-20 survival equipment kit assembly of the A/P22P-20 crew back pack assembly and is tethered to the assembly via a lanyard.

##### **8.6.4.2 LRU-29/P22P-20 Function**

The LRU-29/P22P-20 life raft assembly is deployed by the aircrew. If emergency egress from the aircraft occurs over water, aircrew should deploy the raft prior to water entry if conditions allow. The life raft should open and inflate automatically after deployment during descent. The bridle cord is attached to a grommet in the LRU-29/P22P-20 sealed packaging and the SRU-41/P22P-20 survival equipment kit.

When the bridle cord is fully extended, the vacuum sealing is torn open and a separate internal line attached to the FLU-10 inflation valve actuates the inflation process via gravity drop. If emergency egress occurs over land deployment of the life raft is not recommended prior to landing.

##### **8.6.4.3 LRU-29/P22P-20 Application**

The LRU-29/P22P-20 life raft assembly is only authorized for use in the A/P22P-20 crew back pack assembly used in the E-2C.

#### **8.6.5 Multiplace Life Rafts (MPLR A/A), LRU-30A/A (8-Man), LRU-31A/A (12-Man), and LRU-32A/A (20-Man)**

The MPLRs are multiplace life rafts (Figure 8-33 illustrates the A/A) intended for use by aircrew and passengers forced down at sea.

#### **Note**

The MPLR A/A model life raft is replacing the MPLR. The main difference between the two models is the container in which it is stored. The MPLR uses a vacuum-sealed bag, while the MPLR A/A utilizes a polymer tub with cover. Since any other difference in the life raft models is slight, this manual will describe the MPLR A/A unless otherwise noted.

##### **8.6.5.1 MPLR A/A Configuration**

The newly configured MPLR LRU-30A/A (8-man), LRU-31A/A (12-man), and LRU-32A/A (20-man) consist of the life raft in a polymer tub with a cover and webbing straps with frangible links. The tub cover has a clear window for verification of the CO2 bottle charge. The frangible links are designed to break at 180 pounds of force as the life raft expands when actuated. The tub assembly is stowed in a newly configured container that incorporates protective skids on the bottom for horizontal storage and at the end opposite of the inflation pull handle for vertical stowage. The container is custom-fitted to the tub, streamlining the overall package. This new configuration functions exactly as the old vacuum-bagged version; only packaging of the life raft and container have changed, the life rafts themselves are unchanged (see Figure 8-34).

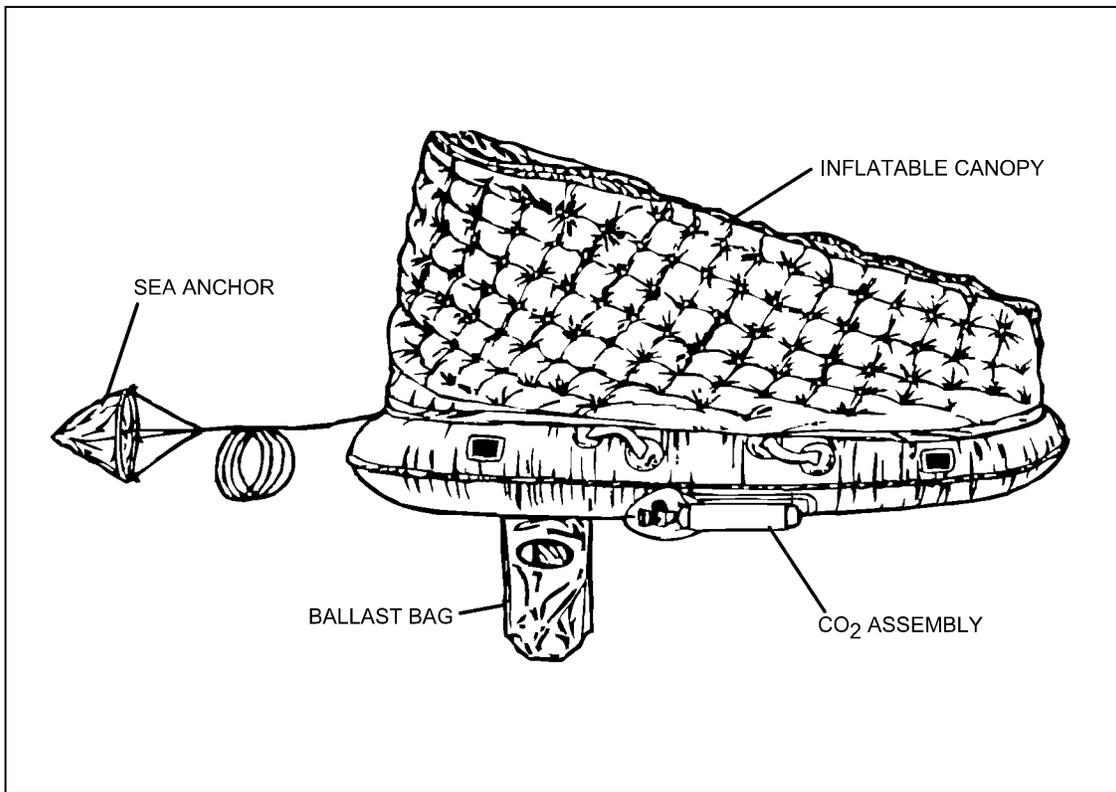


Figure 8-32. LRU-29/P22P-20 Sealed Life Raft Assembly

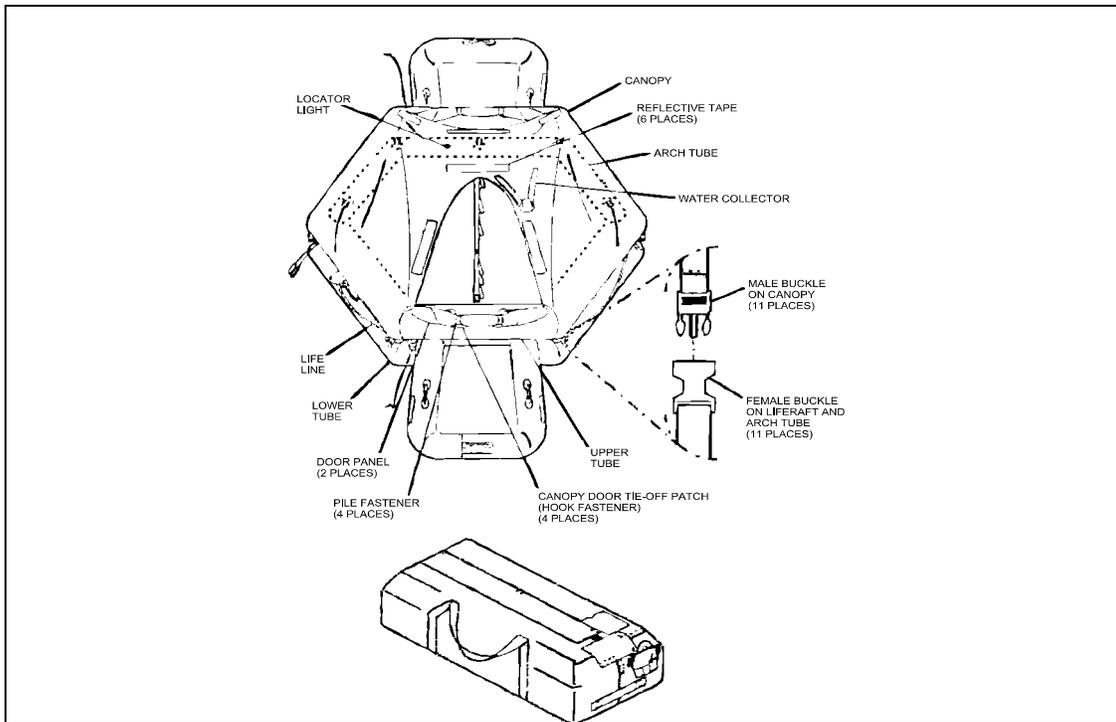


Figure 8-33. MPLR A/A

Description	Quantity Required			Reference Number	NIIN	SM&R Code
	8-man	12-man	20-man			
Desalter Kit, Seawater, MK2, Type II (Note 7)	5	6	10	MIL-D-5531	00-372-0592	PAOZZ
Sea Dye Marker	4	5	8	MIL-S-17980	00-270-9986	PAOZZ
Distress Signal MK-124 MOD 0	7	8	10	DL 313734	01-030-8330	—
or Signal Kit, MK-189 MOD 0 (Note 9)	1	1	1	—	L564-1370-01-418-2657	—
Water Storage Bag	3	4	7	MIL-B-8571	00-485-3034	PAOZZ
Water, Drinking, Bagged, Emergency (Note 8)				—	01-124-4543	PAOZZ
w/ MROD	8	12	20			
w/o MROD	20	30	50			
First-Aid Kit	1	1	2	SC-C-6545-IL	00-922-1200	—
Desalinator, Manual Reverse Osmosis	1	1	1	—	01-313-6086	—
Sunburn Preventative Preparation	1	2	3	MIL-S-37800	01-121-2336	PAOZZ
Food Packet, Life Raft	8	12	20	MIL-F-15281	01-028-9406	PAOZZ
Bailing Sponge	1	4	6	L-S-626	00-240-2555	PAOZZ
Combat Casualty Blanket Type I	1	2	3	MIL-B-36964	00-935-6665	PAOZZ
Hand-Generated Flashlight A-9 (Note 2)	1	1	1	MIL-F-8209	00-283-9806	PAOZZ
Flare Gun MK-79 MOD 0 (Note 9)	1	1	2		00-866-9788	PAOZZ
Signal Light (Strobe) SDU-5/E or SDU-39/N	1	1	1	MIL-L-38217	00-067-5209	PAOZZ
					00-411-8535	PAOZZ
Light, Chemical	2	2	2	95277-80	01-334-4274	PAOZZ
Signal Mirror, Type I (Note 3) or Signal Mirror, Type II	1	1	1	MIL-M-18371	00-105-1252	PAOZZ
	1	1	1		01-455-6695	PAOZZ
	1	1	1		01-455-6671	PAOZZ
Survival Radio (Notes 4 and 6) and/or Radio Beacon AN/URT-33A (Note 4)	1	1	1	MIL-B-38401	00-160-2136	PAOZZ
Code Card (Note 5)	1	1	1	—	—	—
Whistle Type II	1	1	1	MIL-W-1053	00-254-8803	PAOZZ
Compass Pocket, Type MC-1 (Note 1) or Compass, Wrist	1	1	1	MIL-C-17853	00-515-5637	PAOZZ
					WCC-100	00-809-5252
Pocket Knife	1	1	1	MIL-K-818	00-162-2205	PAOZZ
Cord, Nylon, Utility, 50 feet	1	1	1	MIL-C-5040	00-240-2154	PAOZZ

Notes: 1. Use MIL-C-17850 until stock is depleted, then use WCC-100.  
2. Required for Arctic missions; optional otherwise.  
3. The Type II mirror (large) shall be utilized in lieu of the Type I mirror (small) until stock of the Type II mirror is depleted.  
4. Survival Radio or Radio Beacon requirements shall be in accordance with OPNAVINST 3710.7 series. Following radios apply: Voice-Beacon: AN/PRC-90, AN/PRC-90-2, and AN/PRC-149, Beacon only: AN/URT-33, AN/PRT-5, and AN/PRC-140. The AN/PRC-149 will become the preferred radio when available.  
5. Refer to NAVAIR 13-1-6.5.  
6. Ensure battery service life does not expire prior to the next scheduled special inspection. Refer to applicable radio maintenance publication for battery service life.  
7. Authorized for use in Arctic/Antarctic environments.  
8. MROD shall be installed if available. MPLR is considered RFI without MROD provided bagged water is increased; MROD should not be used where water temperatures are below 36°F.  
9. MK-189 MOD 0 Signal Kit contains 6 MK-124 Day/Night flares and 2 MK-79 MOD 0 flare guns. If used, it fills flare requirements.

Figure 8-34. MPLR A/A List of Survival Items

**8.6.5.2 MPLR A/A Function**

The LRU-30A/A, LRU-31A/A, and LRU-32A/A are inflated by pulling the inflation pull handle attached to the actuation/mooring line (Figure 8-35). The inflation pull handle and actuation/mooring line are stowed in a pocket at the opposite end of the carrying case that has protective skids (used for vertical storage). The actuation/mooring line has a snap-hook attached to the bitter end for attachment to the aircraft or the person(s) launching the life raft. The newly configured MPLR has a shortened stroke to actuate the life raft. Pulling the inflation pull handle will fully inflate the life raft, boarding ramps, and canopy. The survival equipment container is tethered to the life raft and should be retrieved after entering life raft.

**8.6.5.3 MPLR A/A Application**

The LRU-30A/A, LRU-31A/A, and LRU-32A/A MPLR are authorized for use aboard all USN/USMC multi-place transport and rotary-wing aircraft except for C-130 aircraft-wing stowage compartments. The LRU-33/A is the only MPLR authorized for use in C-130 wing-stowage compartments.

**8.7 ANTIEXPOSURE APPAREL ASSEMBLIES**

**Note**

The environmental guidelines dictating the mandatory use of these antiexposure assemblies can be found in the climatic and operational requirements as established by NATOPS General Flight and Operational Instructions Manual (OPNAVINST 3710.7 series).

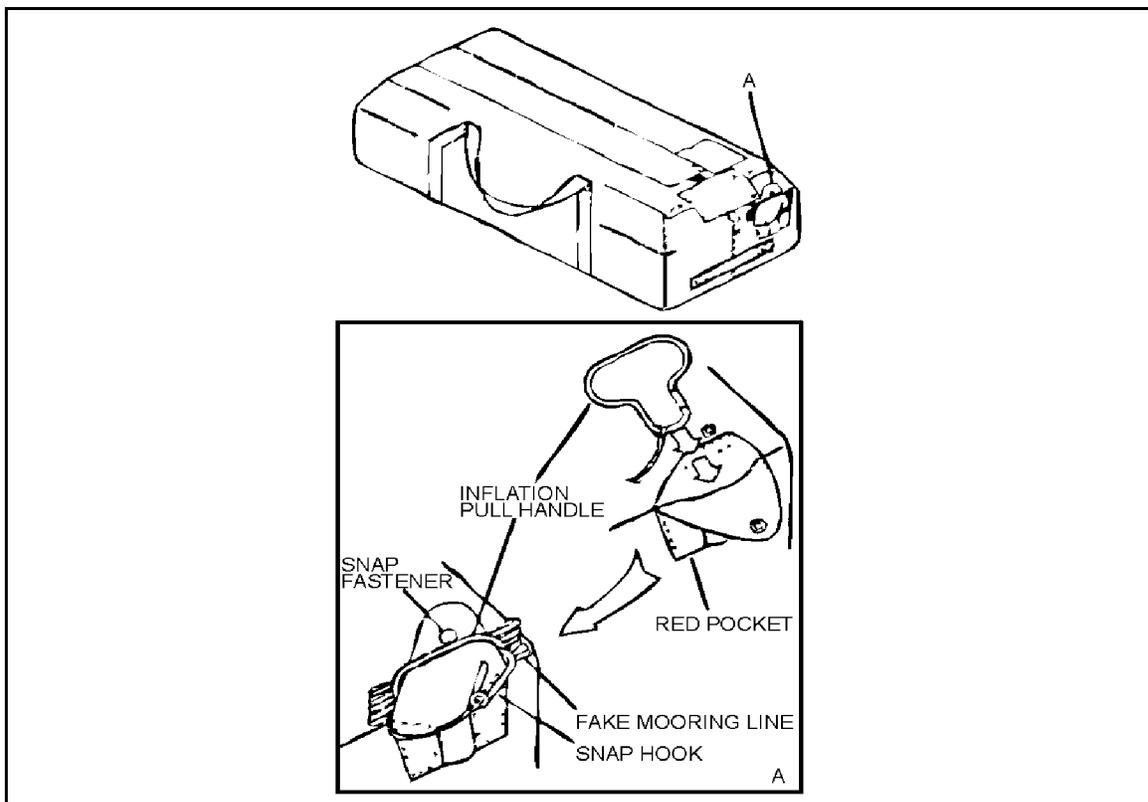


Figure 8-35. MPLR A/A Inflation Pull Handle

### **Note**

This chapter covers constant-wear and quick-donning antiexposure assemblies. Antiexposure assemblies are designed to protect the aircrew member or passengers from exposure to cold-water conditions in the event of immersion. The constant-wear assemblies provide additional protection from cold weather.

#### **8.7.1 A/P22P-17 Antiexposure Apparel Assembly**

The A/P22P-17 Antiexposure Apparel Assembly (Figure 8-36), which is composed of the CWU-79/P passenger antiexposure survival system (PAESS), is designed to provide cold weather/water protection for non-combat-equipped passengers. The ensemble will be used on carrier onboard delivery (COD) and vertical onboard delivery (VOD) aircraft on flights over water or where cold climatic conditions could be hazardous or fatal should emergency egress be necessary.

#### **8.7.2 CWU-79/P Passenger Antiexposure Survival System**

The PAESS was designed to meet OPNAV requirements for antiexposure protection for nontroop, nonaircrew personnel on COD/VOD missions when antiexposure protection is required for the aircrew.

##### **8.7.2.1 PAESS Configuration**

The suit is a modified size 12 CWU-62A/P antiexposure coverall. It is a lightweight coverall that will prevent water from leaking through it from the outside, but which will allow body moisture to pass out, thereby lessening heat and moisture buildup. The CWU-79/P has an attached hood and there are adjustment straps on each side of the torso which will enable the coverall to fit passengers of various sizes. The coverall has wrist seals and a neck seal that are made of gas-expanded neoprene, which are adjustable to most sizes. A pocket on the right thigh provides stowage for the HAU-12/P antiexposure mittens and HGU-32/P antiexposure hood. CWU-75/P antiexposure socks are attached as an integral part of the assembly. The PAESS will provide protection from immersion hypothermia when worn over regular winter uniforms or civilian street clothing.

1. CWU-75/P Antiexposure Socks. The CWU-75/P antiexposure socks are of sewn construction made of waterproof, breathable, stretchable fabric, and are attached to the legs of the CWU-79/P coverall.
2. PAESS Supplemental Components. The HGU-32/P antiexposure hood and HAU-12/P antiexposure mittens are supplemental components of the PAESS system.

##### **8.7.2.2 PAESS Application**

When authorized by the type commander, the A/P22P-17 antiexposure apparel assembly shall be worn aboard COD/VOD aircraft when antiexposure protection is required for the aircrew. The A/P22P-17 assembly shall be worn by passengers for flight operations IAW the climatic and operational requirements established by the NATOPS General Flight and Operational Instructions Manual OPNAVINST 3710.7 (series).

#### **8.7.3 CWU-83/P Passenger Antiexposure Coverall Ensemble**

The CWU-83/P passenger antiexposure coverall ensemble (Figure 8-37), which consists of the CWU-83/P passenger antiexposure coverall (PAEC), neoprene gloves, neoprene hood, and worn with the LPU-32/P or LPP-1A life preserver unit and HGU-24/P cranial, is designed to provide cold weather/water protection for non-combat-equipped passengers. The ensemble will be used on VOD aircraft on flights over water or where cold climatic conditions could be hazardous or fatal should emergency egress be necessary. When worn over regular winter uniforms or winter civilian clothing, the CWU-83/P can provide 1-hour protection from hypothermia in 40 °F seas.

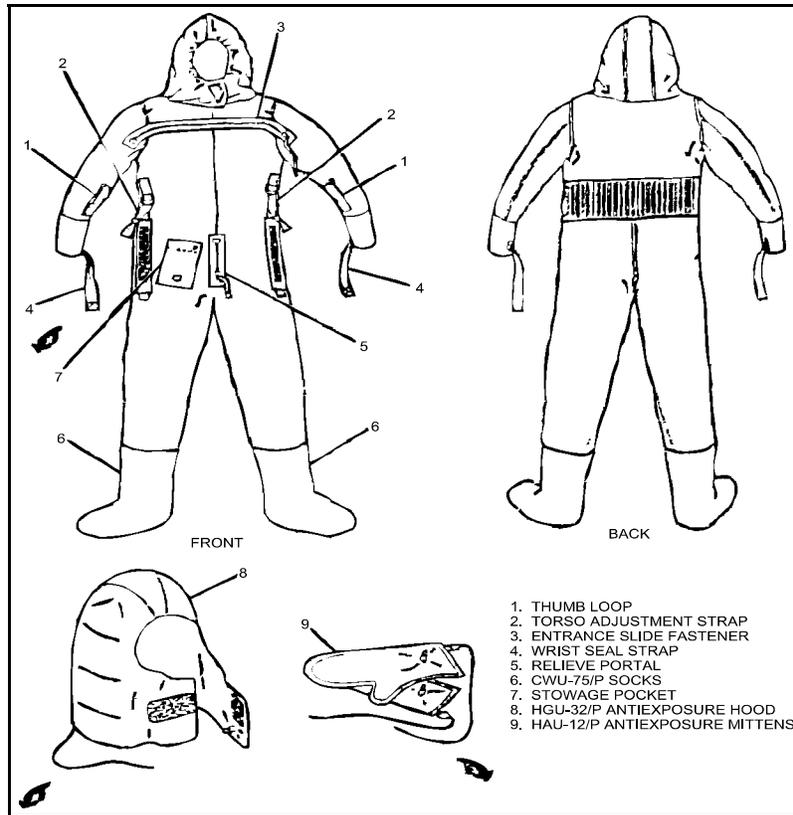


Figure 8-36. A/P22P-17 Antiexposure Apparel Assembly

### 8.7.3.1 CWU-83/P Configuration

The CWU-83/P PAEC was designed to meet requirements for antiexposure protection for nontroop, nonaircrew personnel on VOD missions when antiexposure protection is required for the aircrew that prevents water from leaking in, but allows sweat vapor to evaporate and alleviate heat stress and moisture buildup. The CWU-83/P has a neoprene hood stowed in the right thigh pocket and neoprene five-finger gloves stowed in each of the forearm pockets. The hood and each glove are secured to the suit with a snap-off ribbon lanyard. Two sizes of coverall are available to passengers and have color-coded labels on the chest area. The size small coverall has contrasting yellow trim; the size large has no contrasting color trim. Neoprene wrist and neck seals stretch to fit each of the small and large size range. To expel trapped air in the suit, the suit is equipped with a self-burping exhaust valve on each shoulder, and air blocking zip panels (gaiters) on each calf. To assist with search and rescue, a lifejacket retention loop is installed on the center front and a grab panel is installed across the center upper back.

### 8.7.3.2 CWU-83/P Application

The CWU-83/P shall be worn by non-combat-equipped passengers for flight operations IAW with the climatic and operational requirements established by the NATOPS General Flight and Operational Instructions Manual OPNAVINST 3710.7 (series).

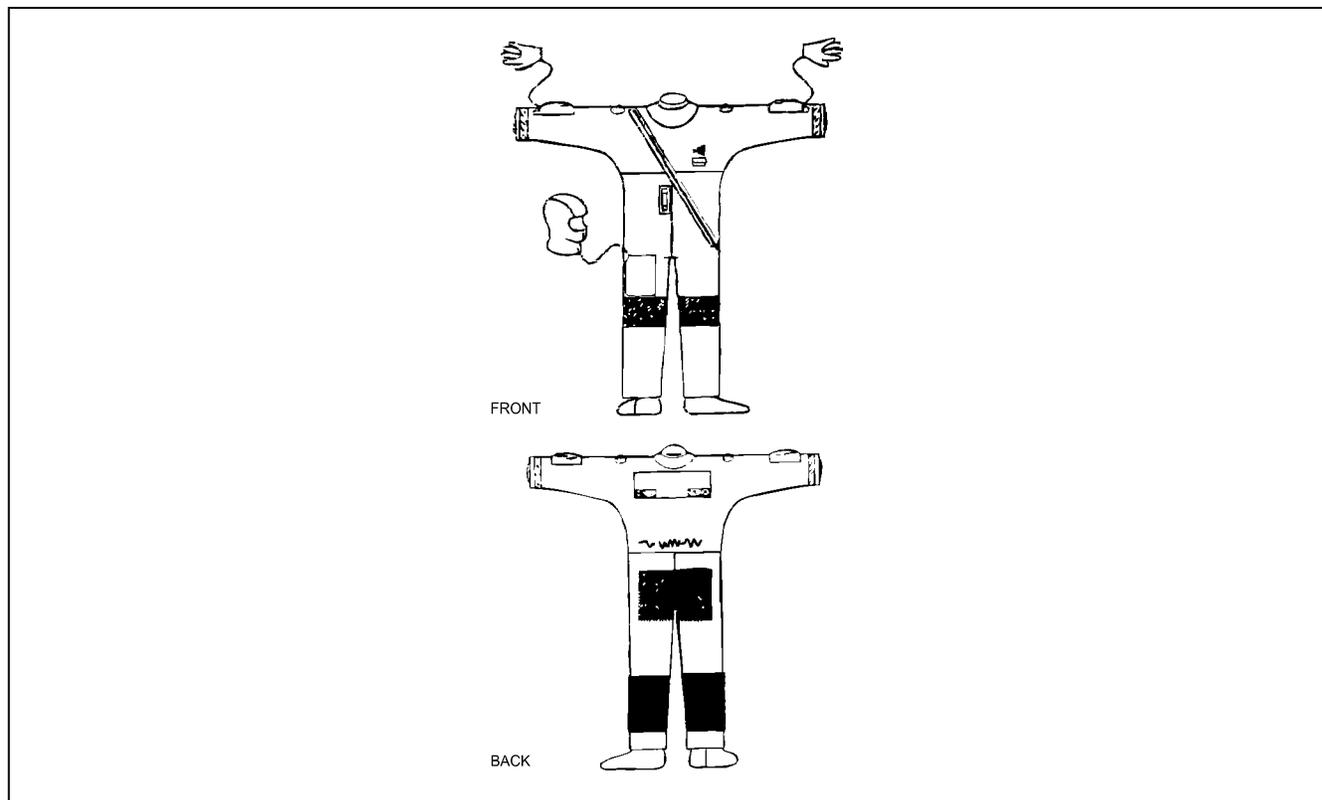


Figure 8-37. CWU-83/P Passenger Antiexposure Coverall Ensemble

#### 8.7.4 A/P22P-6 Series Antiexposure Apparel Assemblies, Constant Wear

##### Note

- Paragraphs in this section pertain to the A/P22P-6 series antiexposure apparel assemblies. The A/P22P-6 series consists of the A/P22P-6(V)2, A/P22P-6A(V)2, A/P22P-6B(V)2, A/P22P-6C(V)2, and A/P22P-6D(V)2 assemblies, except where noted.
- The A/P22P-6 series are continuous-wear assemblies designed to keep the wearer dry. The complete assemblies provide protection from the thermal effects of cold-water immersion in the event of emergency overwater aircraft egress.

##### 8.7.4.1 A/P22P-6 Configuration

The A/P22P-6 series antiexposure apparel assemblies, constant wear (Figure 8-38), consist of the components listed in Figure 8-39.

1. CWU-62/P (series) coverall (Figure 8-40). The CWU-62/P (series) coverall is a lightweight coverall that prevents water from entering, but permits bodily produced moisture vapor to pass out, thus minimizing heat and moisture buildup.

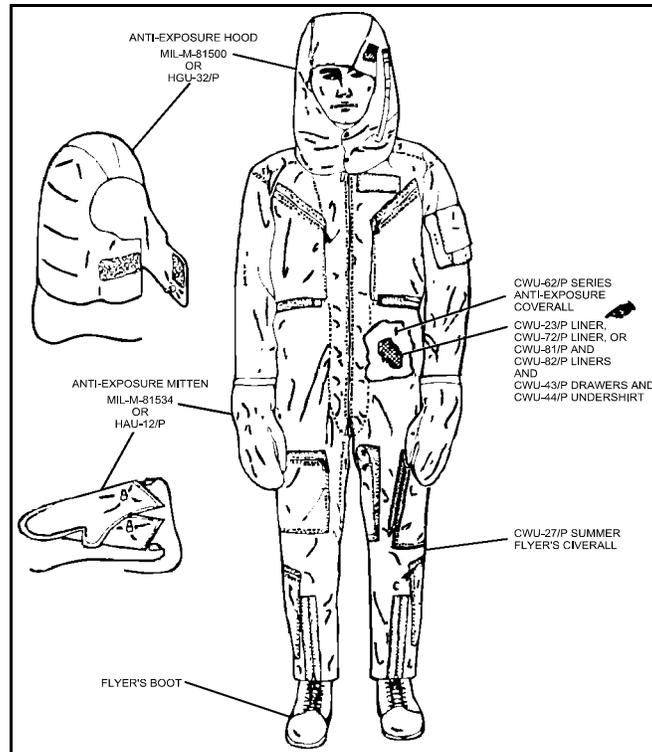


Figure 8-38. A/P22P-6 Series Antiexposure Apparel Assembly, Constant Wear

### Note

- The CWU-62/P, CWU-62A/P, and CWU-62B/P antiexposure coveralls are one-piece garments supplied in twelve sizes. The CWU-62C/P antiexposure coverall is a one-piece garment supplied in nine sizes.
  - These coveralls shall not be worn in direct contact with the skin. The function of the antiexposure coverall is most effective when worn over recommended undergarments. Skin irritation is known to result from wearing the coverall in direct contact with the skin.
2. CWU-74/P coverall. The coverall has two breast pockets, a right thigh pocket, a lower right and left pocket, and pencil pocket on the left upper sleeve. The relief slide fastener is 8 inches long and installed horizontally on the coverall. The coverall comes with neck and wrist seals installed.
  3. SRU-25/P socks. The SRU-25/P socks are one-piece, and are molded to shape to provide comfort and a good fit. Tops of socks extend above flight boots to reduce bulk and restriction.
  4. CWU-75/P antiexposure socks. The CWU-75/P antiexposure socks are of sewn construction made of waterproof, breathable, stretchable fabric. Tops of socks extend above flight boots to reduce bulk and restriction.

**Table 5-1B. Components of A/P22P-6 Series Antiexposure Apparel Assemblies, Constant Wear**

Component Nomenclature	Reference (paragraph)	Assemblies (A/P22P*)				
		6(V)2	6A(V)2	6B(V)2	6C(V)2	6D(V)2
CWU-43/P Drawers	5-50	X	X	X	X	X
CWU-44/P Undershirt	5-50	X	X	X	X	X
CWU-23/P Liner, Antiexposure	5-51	X	O	O	O	O
CWU-72/P Liner, Antiexposure	5-52	O	X	X	X	X
CWU-81/P Liner, Antiexposure (Shirt, women only)	5-52A	X	X	X	X	X
CWU-82/P Liner, Antiexposure (Drawers, women only)	5-52A	X	X	X	X	X
CWU-62/P Antiexposure Coverall	5-53	X	X	—	—	—
CWU-62A/P Antiexposure Coverall	5-53	—	—	X	—	—
CWU-62B/P Antiexposure Coverall	5-53	—	—	—	X	—
CWU-62C/P Antiexposure Coverall	5-53	—	—	—	—	X
CWU-74/P Antiexposure Coverall	5-53A	O	O	O	O	O
SRU-25/P Socks	5-54	X	X	—	—	—
CWU-75/P Antiexposure Socks	5-55	—	—	X	X	X
CWU-27/P Flyer's Summer Coverall or MEAFFS	5-56	X	X	X	X	X
Hood, MIL-H-81500	5-189	X	X	O	O	O
HGU-32/P Hood	5-208	—	—	X	X	X
Mittens, MIL-M-81534	5-176	X	X	O	O	O
HAU-12/P Mittens	5-225	—	—	X	X	X
Legend: X = Required O = Optional — = Not Applicable						

Figure 8-39. Components of the A/P22P-6 Series Antiexposure Apparel Assembly, Constant Wear

**8.7.5 A/P22P-7(V) Quick-Donning Flyers Antiexposure Apparel Assembly**

The A/P22P-7(V) quick-donning antiexposure apparel assembly is an emergency-use assembly designed to keep the wearer warm and dry. The complete assembly provides protection from the thermal effects of cold-water immersion in the event of emergency over water aircraft egress.

**8.7.5.1 A/P22P-7(V) Configuration**

The A/P22P-7(V) quick-donning flyers antiexposure apparel assembly consists of the following:

1. CMU-21/P22P-7(V) modified survival vest. The CMU-21/P22P-7(V) survival vest provides maximum useful storage for survival equipment, consistent with minimal bulk and weight. It is identical to the SV-2 survival vest, but has the addition of an expansion panel for use over the CWU-60/P.

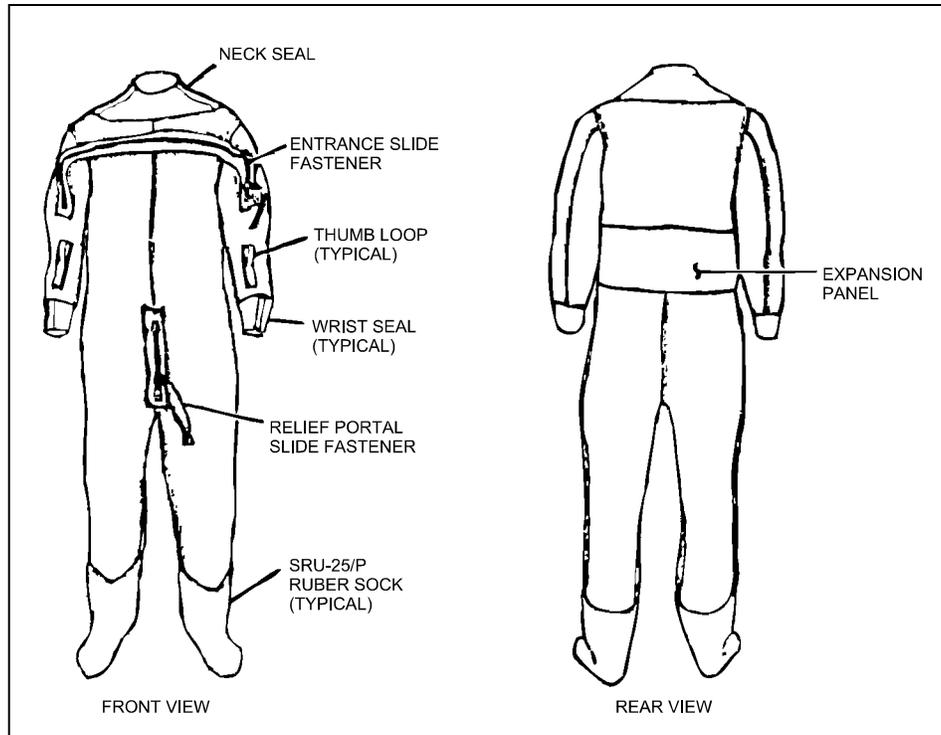


Figure 8-40. CWU-62/P (Series) Coverall

2. LPU-27/P22P-7(V) life preserver unit. The LPU-27/P22P-7(V) is identical to the LPU-21B/P life preserver but has the addition of an expansion panel for use over the CWU-60/P. It is integrated with the CMU-21/P22P-7(V) in order to provide flotation for in-water survival situations. Refer to NAVAIR 13-1-6.1-2 for a detailed description of the LPU-27 life preserver.
3. HGU-32/P antiexposure hood (optional). The HGU-32/P hood is stowed in the thigh pocket of the CWU-60/P coverall. It is to be used whenever the helmet is removed during a cold-water survival situation.
4. HGU-68(V) 2/P or HGU-47(V) 2/P helmet. The HGU-68(V)2/P helmet is worn by aircrew personnel of P-3 aircraft. The helmets are worn with the anti-exposure assembly and over the hood of the CWU-60/P coverall.

#### Note

C-130 aircrews are not required to wear helmets.

#### 8.7.5.2 A/P22P-7(V) Application

The A/P22P-7(V) assembly is designed to provide a minimum of 6 hours of thermal protection against hypothermia and enough buoyancy to keep a downed aircrewman afloat should he be unable to board a life raft. The CWU-60/P component is not worn continuously, but is stowed onboard the P-3 and C-130 aircraft for emergency use. In general, the coverall will be used by aircrew members in an emergency in accordance with climatic and operational requirements as established by NATOPS General Flight and Operational Instructions Manual (OPNAVINST 3710.7 series).

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# APPENDIX A

## Rescue/Medical Report

### A.1 PURPOSE

The purpose of the rescue/medical reports is to provide information that will improve U.S. naval SAR capability. The compiled data will help to identify requirements for search and rescue equipment, procedures, and training. Those submitting the reports are encouraged to use them to identify deficiencies and recommend changes.

The rescue report (SAR Form 3-50.1/1) is not to be used as evidence in legal proceedings or disciplinary action. The medical rescue report (SAR Form 3-50.1A) provides documentation of a survivor's condition upon pickup, during the transfer, and upon release to a medical facility.

### A.2 REQUIREMENTS

#### A.2.1 SAR Form 3-50.1/1

A rescue report shall be submitted whenever a search or rescue is attempted or accomplished that involves Navy personnel or assets (i.e., ships, boats, aircraft, crash trucks, search parties, etc.). The SAR effort may involve aircraft or nonaircraft mishaps, and military as well as nonmilitary circumstances. MEDEVACs and disaster relief efforts are also considered SAR efforts for purposes of this report. The report is required in any case where personnel and/or equipment are dispatched regardless of the success of the effort. Dispatch of medical department ambulances for transport of patients will not normally require a report. The report should be submitted within 7 calendar days of the SAR effort by the reporting custodian or commanding officer of the assets dispatched.

#### A.2.2 Medical Rescue Report SAR Form 3-50.1A

The medical rescue report shall be completed when a naval asset performs a rescue/MEDEVAC mission with medical department personnel attending the survivor.

### A.3 GENERAL INSTRUCTION

1. If exact information is not known, give the best information available. If the information cannot be obtained or is not applicable to the particular situation, indicate UNK or N/A in the appropriate block.
2. In cases where multiple rescues are made under similar circumstances such as a natural disaster, evacuation, or relief effort, only one report need be submitted.
3. Reports may be combined when possible, such as in a case where an embarked helicopter and a motor whaleboat/rescue boat from the same ship respond to the same incident.
4. Detailed instructions for completing each block of SAR Form 3-50.1/1 are found in Figure A-1. Instructions for SAR form 3-50.1A are found in Figure A-2.
5. The report is unclassified; therefore, any classified information should be omitted and the word "CLASSIFIED" placed in the applicable block.

## **NTTP 3-50.1**

### **A.4 DISTRIBUTION**

#### **A.4.1 Original SAR Form 3-50.1/1**

Forward the original SAR Form 3-50.1/1 directly to:

COMMANDING OFFICER  
ATTN: SARMM  
HELSEACOMBATRON THREE (HSC-3)  
BOX 357122  
SAN DIEGO, CA 92135-7122

#### **A.4.2 Original SAR Form 3-50.1A**

The original SAR Form 3-50.1A remains with the victim/survivor at the receiving medical facility or medical transportation service.

#### **A.4.3 Copies of SAR Form 3-50.1A**

One copy of SAR Form 3-50.1A is to be retained by the reporting custodian, and one copy is to be forwarded directly to:

COMMANDING OFFICER  
ATTN: SARMM  
HELSEACOMBATRON THREE (HSC-3)  
BOX 357122  
SAN DIEGO, CA 92135-7122

<b>Rescue Report SAR Form 3-50.1/1</b>	<b>SPECIAL HANDLING REQUIRED SEE NTTP 3-50.1 Appendix A for Completion Instructions</b>	<b>Page 1 of 2</b>					
1. Custodian of SRU:		2. SRU Type:					
2a. Flight Hours Expended:		2b. Steaming Hours Expended:					
2c. Aircraft Sorties Expended:		2d. Number of Surface Units:					
3. Report Serial Number: Type Case/Mishap:		4. Requesting Agency					
5. Air Force and/or Coast Guard Unit Case Number (if applicable):							
6a. Date Time Groups: Local (Example: 280936 APR 03) Incident _____ Alert _____ Launch _____ On Scene _____ Located _____ Recoverd _____ Delivered _____ RTB _____		7. Mission Categories: (Check appropriate boxes) <input type="checkbox"/> Military Distress <input type="checkbox"/> Day <input type="checkbox"/> Civil Incident <input type="checkbox"/> Night <input type="checkbox"/> Maritime <input type="checkbox"/> VMC <input type="checkbox"/> Overland <input type="checkbox"/> IMC <input type="checkbox"/> Plane Guard <input type="checkbox"/> Combat <input type="checkbox"/> Aviation Mishap <input type="checkbox"/> Search Only <input type="checkbox"/> Man Overboard <input type="checkbox"/> Recover Only <input type="checkbox"/> Ship MEDEVAC <input type="checkbox"/> Search & Recovery <input type="checkbox"/> Hospital MEDEVAC <input type="checkbox"/> Foreign Personnel <input type="checkbox"/> Disaster Relief <input type="checkbox"/> Multiple Incidents					
6b. Distance in nautical miles To scene: Off shore:		8. Weather data Air Temp: Water Temp: Wind direction: Windspeed (KTS) Beafort sea scale:					
9. Rescue Personnel Identification Data (All Persons)							
a. Name/Rank/Rate		Duty on rescue vehicle					
		HAC					
		COPILOT					
		CREW CHIEF					
10a. Rescue Equipment (N=Needed/U=Used) Check appropriate boxes/If multiple items circle as appropriate							
N    U		N    U					
<input type="checkbox"/>	<input type="checkbox"/>	VHF/UHF Communication	ACFT <input type="checkbox"/> /Ship <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Datum Marker Buoy	
<input type="checkbox"/>	<input type="checkbox"/>	VHF/UHF Navigation	ACFT <input type="checkbox"/> /Ship <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Electric Sea Marker	
<input type="checkbox"/>	<input type="checkbox"/>	LORAN, OMEGA, GPS	ACFT <input type="checkbox"/> /Ship <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	J-Bar Davit	
<input type="checkbox"/>	<input type="checkbox"/>	Night Vision Goggles/FLIR		<input type="checkbox"/>	<input type="checkbox"/>	Heaving Line	
<input type="checkbox"/>	<input type="checkbox"/>	CASP/SISAR/NAVSAR		<input type="checkbox"/>	<input type="checkbox"/>	Life Ring	
<input type="checkbox"/>	<input type="checkbox"/>	Rescue Strop		<input type="checkbox"/>	<input type="checkbox"/>	Swimmer Tending Line	
<input type="checkbox"/>	<input type="checkbox"/>	Quick Strop		<input type="checkbox"/>	<input type="checkbox"/>	Boat Hook	
<input type="checkbox"/>	<input type="checkbox"/>	Rescue Litter		<input type="checkbox"/>	<input type="checkbox"/>	Megaphone	
<input type="checkbox"/>	<input type="checkbox"/>	Trail Line Assembly		<input type="checkbox"/>	<input type="checkbox"/>	RHIB/MWB Radio (type)	
<input type="checkbox"/>	<input type="checkbox"/>	Rescue Seat		<input type="checkbox"/>	<input type="checkbox"/>	Rescue Swimmer Dry suit	
<input type="checkbox"/>	<input type="checkbox"/>	Rescue Net/Rescue Basket		<input type="checkbox"/>	<input type="checkbox"/>	Quick Strop	
<input type="checkbox"/>	<input type="checkbox"/>	Rappel/Belay Equipment		<input type="checkbox"/>	<input type="checkbox"/>	TRI SAR Harness	
<input type="checkbox"/>	<input type="checkbox"/>	Tree Extraction Equipment		<input type="checkbox"/>	<input type="checkbox"/>	Rescue Swimmers Radio (type)	
<input type="checkbox"/>	<input type="checkbox"/>	Hoisting Vest		<input type="checkbox"/>	<input type="checkbox"/>	Rescue Swimmers Knife	
<input type="checkbox"/>	<input type="checkbox"/>	ALDIS Lamp/Hand Held Search light		<input type="checkbox"/>	<input type="checkbox"/>	Rescue Swimmers Flare/Strobe	
<input type="checkbox"/>	<input type="checkbox"/>	Chemical Lights		<input type="checkbox"/>	<input type="checkbox"/>	Level "A" Medical Kit	
<input type="checkbox"/>	<input type="checkbox"/>	MK-25 MLM		<input type="checkbox"/>	<input type="checkbox"/>	Level "B" Medical Kit	
<input type="checkbox"/>	<input type="checkbox"/>	MK 58 MLM		<input type="checkbox"/>	<input type="checkbox"/>	O2 System	
<input type="checkbox"/>	<input type="checkbox"/>	MK 18 Smoke Grenade		<input type="checkbox"/>	<input type="checkbox"/>	Quick Splice/Cable Grip	
<input type="checkbox"/>	<input type="checkbox"/>	MK-1/LPU-32/P Life Preserver Assembly		<input type="checkbox"/>	<input type="checkbox"/>	Other Equipment: (Explain)	
Other Equipment Explain:							
10 Equipment Failures/Difficulties (Explain):							

Figure A-1. SAR Form 3-50.1/1 (Sheet 1 of 2)

Rescue Report (SAR Form 3-50.1/1)		Page 2 of 2			
11. Personnel Recovered Data (Place total number in appropriate block(s))					
	Number of Personnel Recovered		Number of DOD Personnel		
	Number of Personnel Not Recovered		Number of Non-DOD Personnel		
	Number of Personnel Recovered by Other Means		Number of Personnel Requiring Medical Attention		
12. Medical Difficulties (Place # of afflicted personnel in appropriate boxes)					
	Respiratory Problems		Bleeding		Anaphylaxis
	Hypothermia		Burns		Shock
	Broken Bones		Air Embolus		Blunt Trauma
	Dismemberment		Internal Bleeding		Neurological
	Spinal Injury		Bends		Dead on Arrival
	No Pulse		Animal Bite		Other (explain)
Explain:					
12a. Distress Vessel/aircraft:					
13. Distress Narrative:					
14. Search Narrative:					
15. Recovery Narrative:					
16. Problems Encountered:					
17. Recommendation:					
18. Submitting Official:			Date	POC:	
19. Complete if Rescue Swimmer Deployed:					
a. Parachute Entanglement		b. Swimmer Deployments			
<input type="checkbox"/>	Balloon Canopy		<u>TYPE</u>		<u>NUMBER</u>
<input type="checkbox"/>	Suspension (Shroud) Line		Jump 10/10		
<input type="checkbox"/>	Other (explain under problems/recommendations)		Direct Deploy		
			Lowered via hoist		
			RHIB/MWB		
			Other:		
Explain Other:					
c. Rescue Swimmer Problems/Recommendations:					

Figure A-1. SAR Form 3-50.1/1 (Sheet 2 of 2)

### Guidance for Filling Out SAR Report

1. Indicate aircraft reporting custodian, ship, or facility controlling search and rescue recovery unit (SRU).
2. Supply the specific type of vehicle; e.g., SH-3, HH-46D, MH-60S, etc.
  - 2a. Actual number of flight hours expended on the SAR case by the SRU.
  - 2b. Actual total number of steaming hours expended on the SAR case by the SRU.
  - 2c. Actual total number of aircraft sorties expended in the SAR case by the SRU.
  - 2d. Actual total number of ship sorties expended in the SAR case by the SRU.
3. Number by calendar year, e.g., 98-01 would be the first report for 1998.
4. Indicate the military command, government agency, or civilian activity requesting assistance.
5. Provide the U.S. Air Force Rescue Coordination Center mission number or Coast Guard unit case number, if assigned.
- 6a. The complete date-time group of each mission phase is to be provided in the appropriate blank. (Use local time.)
- 6b. Self explanatory.
7. Check all appropriate blocks that apply to this mission.

#### Note

In block 7 need to check either SEARCH, RECOVERY, or SEARCH AND RECOVERY.

8. Self explanatory.
- 9a. Rank/rate, if military.
- 9b. Billet: pilot, copilot, swimmer, hospital corpsman, etc.
- 10a. Self explanatory, but be sure to justify equipment “needed” in recommendations section (block 17).
- 10b. Self explanatory, but be sure to explain in detail under problems encountered section (block 16).
11. Fill in appropriate number in each block.
12. Fill in each block with number of personnel in each category.
- 12a. Fill in designation of the distress craft or search target; e.g., F-14, E-2C, Tugboat “Mary J,” etc.
13. Include an in-depth narrative of distress situation that initiated the mission, including aircraft and/or vessel types, location, weather, and how the rescue units were alerted.

## NTTP 3-50.1

14. Include SRU SAR posture/alert status and search tactics. Explain how the search was planned and, if applicable, search patterns, track spacing, sweep widths, and probability of detection for each search; plus planning assumptions (i.e.; LR1 liferaft with a drogue for an overwater ejection).”
15. Explain how the recovery was effected. Include any device the survivor used in assisting or signaling the SRU, and provide any amplifying comments regarding rescue equipment used and medical treatment provided.
16. Explain any difficulties encountered; i.e., personnel, weather, mechanical, communications, etc.
17. These should be in-depth and explicit.
18. Self explanatory.
- 19a. Self explanatory.
- 19b. Indicate number of applicable deployments in number block.
- 19c. Explain in detail any appropriate rescue swimmer problems/recommendations.

### Note

- In block 19c annotate if a HAZREP or Naval Aviation Maintenance Discrepancy Reporting Program (NAMDRP) report is going to be submitted.
- Do not submit this instruction sheet to HSC-3.

### Medical Rescue Report

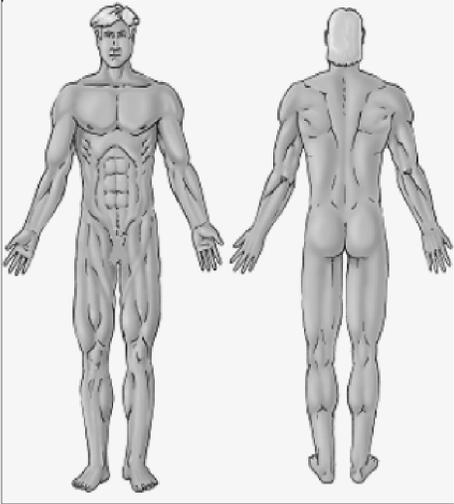
PATIENT IDENTIFICATION		TRANSPORT INFORMATION		HISTORY							
Name:	Service:	Date:	On Scene:	S/S:							
SSN:	Rank:	Incident:	Recovered:	ALLERGIES: LMP:							
DOB:	Age:	Alert:	Delivered:	MEDICATIONS:							
Unit:	Sex:	Launch:	MTF:								
<input type="checkbox"/> U.S. Military <input type="checkbox"/> U.S. Civilian <input type="checkbox"/> Non-U.S. Mil <input type="checkbox"/> Non-U.S. Civ <input type="checkbox"/> EPW											
MECHANISM OF INJURY/CHIEF COMPLAINT/TRANSFER PATIENT DIAGNOSIS											
AIRWAY		BREATHING		CIRCULATION							
Assessment	Treatment	Assessment	Treatment	Assessment	Treatment						
<input type="checkbox"/> Patent/Normal <input type="checkbox"/> Obstructed Other:	OPA: NPA: ETT Size: NT Size: Suction: ____ ml	<input type="checkbox"/> Adequate <input type="checkbox"/> Inadequate <input type="checkbox"/> Bilateral <input type="checkbox"/> R <input type="checkbox"/> L <input type="checkbox"/> Absent Other:	<input type="checkbox"/> NRB <input type="checkbox"/> NC <input type="checkbox"/> BVM <input type="checkbox"/> Ventilator O <sub>2</sub> ____ LPM	Pulse: <input type="checkbox"/> Normal <input type="checkbox"/> Bounding Skin: <input type="checkbox"/> Hot <input type="checkbox"/> Cool	<input type="checkbox"/> Weak <input type="checkbox"/> Absent <input type="checkbox"/> Warm <input type="checkbox"/> Moist						
GLASGOW COMA SCALE											
<b>Eye Opening</b>		<b>Verbal Activity</b>		<b>Motor Activity</b>							
<input type="checkbox"/> 4 - Spontaneous <input type="checkbox"/> 3 - To Command <input type="checkbox"/> 2 - To Pain <input type="checkbox"/> 1 - None		<input type="checkbox"/> 5 - Oriented <input type="checkbox"/> 4 - Confused <input type="checkbox"/> 3 - Inappropriate <input type="checkbox"/> 2 - Incomprehensive <input type="checkbox"/> 1 - None		<input type="checkbox"/> 6 - Obeys Command <input type="checkbox"/> 5 - Localized Pain <input type="checkbox"/> 4 - Withdraws to Pain <input type="checkbox"/> 3 - Flexion to Pain <input type="checkbox"/> 2 - Extension to Pain <input type="checkbox"/> 1 - None							
GCS Total:		Time:		<input type="checkbox"/> None <input type="checkbox"/> Uncontrolled <input type="checkbox"/> Dressing <input type="checkbox"/> Quick Clot <input type="checkbox"/> Touriquet							
CID/Spine Immobilization Type:		Shock: <input type="checkbox"/> Position <input type="checkbox"/> Blankets <input type="checkbox"/> IV <input type="checkbox"/> P.A.S.G.									
VITAL SIGNS			MEDICATION	DOSE	ROUTE	TIME					
TIME:											
BP:											
PULSE:											
RESP:											
S <sub>o</sub> 2%:											
TEMP:											
ECG:											
<b>NARRATIVE</b>			1. Deformities 2. Contusions 3. Abrasions 4. Puncture			5. Burns 6. Tenderness 7. Lacerations 8. Swelling			9. IV/Hep-lock 10. GSW 11. Amputation 12. Sutures/Staples		
											
<b>APPROXIMATE WEIGHT (lbs/Kg):</b> Weight in lbs Divided by 2.2 = Weight in Kg											
SMT/PROVIDER		RECEIVING FACILITY		IV THERAPY		PAIN SCALE (1-10)					
Name:		Transfer Doctor:		IV	1	2	TIME	PAIN			
Rank:		Receiving Doctor:		TIME							
SAR/EVAC Unit:		Pt. Received By:		SITE							
Signature:		Signature:		SIZE							
Report Serial#:		Time Flown:		TYPE							
Call Sign:		ACFT#:		RATE							
HAC:	H2P:	CC:		mL							

Figure A-2. Medical Rescue Report SAR Form 3-50.1A (Sheet 1 of 4)



Medical Rescue Report

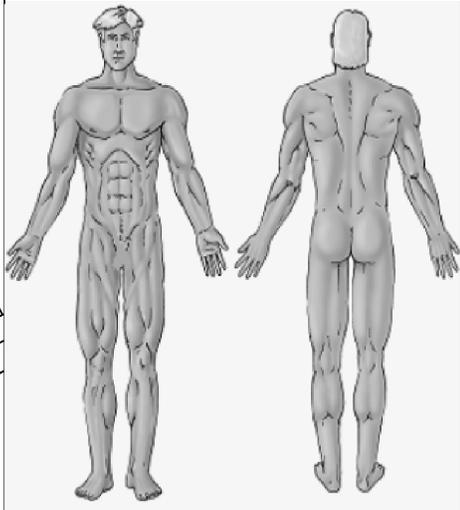
PATIENT IDENTIFICATION		TRANSPORT INFORMATION				HISTORY				
Name: Doe, John S. Service: USN		Date : 24Nov2008		On Scene : 0830		S/S: Pt c/o pain R-upper arm				
SSN: XXX-XX-6789 Rank: SO1		Incident : 24Nov2008		Recovered : 0838		ALLERGIES: NKDA		LMP: N/A		
DOB: 17Sep1975 Age: 33		Alert : 0800		Delivered : 0900		MEDICATIONS: Pt given Morphine 5mg IM for pain @0755				
Unit: SEAL Team 1 Sex: Male		Launch: 0810		MTF: MTF Sand-Box						
<input checked="" type="checkbox"/> U.S. Military <input type="checkbox"/> U.S. Civilian <input type="checkbox"/> Non-U.S. Mil		<input type="checkbox"/> Non-U.S. Civ		<input type="checkbox"/> EPW						
MECHANISM OF INJURY/CHIEF COMPLAINT/TRANSFER PATIENT DIAGNOSIS										
Ambulatory Pt sustained gun-shot wound to Right-upper arm.										
AIRWAY		BREATHING				CIRCULATION				
Assessment	Treatment	Assessment	Treatment			Assessment	Treatment			
<input checked="" type="checkbox"/> Patent/Normal <input type="checkbox"/> Obstructed Other:	OPA: NPA: ETT Size: NT Size: Suction: _____ ml	<input checked="" type="checkbox"/> Adequate <input type="checkbox"/> Inadequate <input type="checkbox"/> Bilateral <input checked="" type="checkbox"/> R <input checked="" type="checkbox"/> L <input type="checkbox"/> Absent Other:	<input checked="" type="checkbox"/> NRB <input type="checkbox"/> NC <input type="checkbox"/> BVM <input type="checkbox"/> Ventilator O <sub>2</sub> 15 LPM				Pulse: <input type="checkbox"/> Normal <input checked="" type="checkbox"/> Bounding Skin: <input type="checkbox"/> Hot <input checked="" type="checkbox"/> Cool	<input type="checkbox"/> Weak <input type="checkbox"/> Absent <input type="checkbox"/> Warm <input checked="" type="checkbox"/> Moist	<input checked="" type="checkbox"/> ECG: NSR <input type="checkbox"/> CPR: <input type="checkbox"/> Dry	
GLASGOW COMA SCALE										
Eye Opening		Verbal Activity			Motor Activity					
<input checked="" type="checkbox"/> 4 - Spontaneous <input type="checkbox"/> 3 - To Command <input type="checkbox"/> 2 - To Pain <input type="checkbox"/> 1 - None		<input checked="" type="checkbox"/> 5 - Oriented <input type="checkbox"/> 4 - Confused <input type="checkbox"/> 3 - Inappropriate <input type="checkbox"/> 2 - Incomprehensive <input type="checkbox"/> 1 - None			<input checked="" type="checkbox"/> 6 - Obeys Command <input type="checkbox"/> 5 - Localized Pain <input type="checkbox"/> 4 - Withdraws to Pain <input type="checkbox"/> 3 - Flexion to Pain <input type="checkbox"/> 2 - Extension to Pain <input type="checkbox"/> 1 - None					
GCS Total: 15		Time: 0831			CID/Spine Immobilization Type: Rescue Litter					
VITAL SIGNS						MEDICATION				
TIME:	0832	0838	0843	0848	0853	0858	1. Morphine	5mg	IV	0841
BP:	100/72	90/72	100/74	110/72	108/72	106/70	2.			
PULSE:	124	126	120	100	98	99	3.			
RESP:	20	21	18	16	18	16	4.			
S <sub>a</sub> O <sub>2</sub> %:	95RA	99NRB	100NRB	100NRB	100NRB	100NRB	5.			
TEMP:	N/A	N/A	N/A	N/A	N/A	N/A	6.			
ECG:		S-TAC	S-TAC	NSR	NSR	NSR	7.			
NARRATIVE						1. Deformities 2. Contusions 3. Abrasions 4. Puncture 5. Burns 6. Tenderness 7. Lacerations 8. Swelling 9. IV/Hep-lock 10. GSW 11. Amputation 12. Sutures/Staples				
33 y/o WD/WN Male with gun-shot wound to R-upper arm caused during fire-fight. Pt did not lose consciousness; was treated with self-aid and buddy-aid (direct pressure→pressure bandage→bleeding controlled). Pt was given 5mg Morphine IM via buddy aid. "Wildcard 02" was called for CASEVAC: zone was not hot.  SMT and 2 <sup>nd</sup> Crewman pursued Pt after assuring scene was safe; greeted by Pt's Team Leader and provided hasty turnover. Pt was awake, alert, sitting upright, and in obvious pain. A-B-Cs in tact; SMT applied additional dressing to R-arm injury after noticing significant exit wound. Rapid head-to-toe assessment revealed no other apparent injuries. Pt secured to litter and transported to Helo. (Weapon & ordnance was given to Pt's team member).  Pt supine in litter, secured to deck. En route: A-B-Cs reassessed, dressings reassessed, O <sub>2</sub> provided via NRB, I.V. access gained, ECG=NSR, Vitals monitored, Morphine administered I.V. for pain, treated for shock, then reassessed interventions and A-B-Cs Q5 minutes. Pt tolerated flight and Tx well. Presented stable with positive response to O <sub>2</sub> , I.V., and Morphine—awake and oriented for remainder of flight.  Upon transfer @ MTF, Pt was awake, oriented. Pt received by MTF staff ER. SMT provided thorough turnover and paperwork to ER Nurse, signed by receiving doctor. Pt's personal affects given to ER staff.										
						APPROXIMATE WEIGHT (lbs/Kg): 100Kg Weight in lbs Divided by 2.2 = Weight in Kg				
SMT PROVIDER		RECEIVING FACILITY				IV THERAPY		PAIN SCALE (1-10)		
Name: Joe M. Sailor		Transfer Doctor: N/A				IV	1	2	TIME	PAIN
Rank: HM2/ES		Receiving Doctor: LCDR Burt Jones MD				TIME	0840		0830	8
SAR/AVAC Unit: HSC-23		Pt. Received By: LT Kathy Brown NC				SITE	L-AC		0840	8
Signature: On Original		Signature: On Original				SIZE	16G		0842	6
Report Serial#: 08-21		Time Flown: 1.5				TYPE	NS .9%		0845	4
Call Sign: Wildcard 02		ACFT#: 12				RATE	KVO		0850	3
HAC: Smith	H2P: Johnson	CC: Stud	2CR: Mack		mL	300ml		0900	4	

Figure A-2. Medical Rescue Report SAR Form 3-50.1A (Sheet 3 of 4)



## APPENDIX B

### SAR Incident Data

- 1) Nature of emergency (e.g., fire, collision, man overboard (see Uncertainty Phase Checklists), disabled, MEDICO/MEDEVAC (see Uncertainty Phase Checklists), overdue, lost person (see Uncertainty Phase Checklists), bailout, crash)
- 2) Position and time of emergency (latitude/longitude or bearing/distance from known point or last reported position and next reporting position), including:
  - a) Heading/speed/altitude
  - b) For boats, fathometer readings, LORAN C lines, ranges and bearing, aids to navigation, and other vessels in the area or recently seen.
- 3) Initial reporter (name/telephone or address if person; name/call sign if craft; parent agency, Air Traffic Control)
- 4) Distressed craft name or type/call sign
- 5) Persons on board (POB)
- 6) Sighting of survivors or parachutes
- 7) Craft description (size, type, craft number, hull color, cabin color, deck)
- 8) Color, rigging, fuselage color, tail color, wingtip color, aircraft “tail” number, vessel number, sail number, etc.
- 9) Secondary search objects
- 10) Radio frequencies in use, monitored, or scheduled
- 11) Emergency radio equipment and frequencies, including EPIRB
- 12) On-scene weather and sea conditions
- 13) Assistance desired, or received
- 14) Fuel on board/available, endurance on scene
- 15) Navigation equipment
- 16) Survival equipment
- 17) Food/water duration
- 18) Date/time of initial report
19. Other pertinent information.

**Supplemental Data for Air/Marine Craft Overdue Incident**

1) Date, time, and point of departure, planned route, speed of advance (SOA), ETA, and point of destination.

\_\_\_\_\_

2) Possible route deviations (favorite spots, friends): \_\_\_\_\_

\_\_\_\_\_

3) Weather history and forecast along the proposed route (see Weather Information in Uncertainty Phase Checklists): \_\_\_\_\_

\_\_\_\_\_

4) Other information sources (friends, relatives, associates, agents, work) \_\_\_\_\_

\_\_\_\_\_

5) Auto/boat trailer license, description, location: \_\_\_\_\_

\_\_\_\_\_

6) Date/time of initial report: \_\_\_\_\_

7) Other pertinent information, such as a craft's history of timely reporting and arrivals:

## **Uncertainty Phase Data and Checklists**

**Uncertainty Phase Checklist**

- 1) Designate SMC.
- 2) Verify departure and nonarrival.
- 3) Assist Air Traffic Control with communications search (aircraft).
- 4) Conduct communications search (vessel).
- 5) Include information requests in scheduled broadcasts.
- 6) Coordinate news releases to media through command public affairs officer (PAO)/executive officer.
- 7) Issue appropriate notices.
- 8) If located and safe:
  - a) Close case.
  - b) Cancel broadcasts and notices.
  - c) Send required reports.
  - d) Notify all concerned.
- 9) If not located by a preliminary communications search, execute an extended communications search; consider advancing to the alert phase.
- 10) Start completing incident processing form.

**Lost Person Checklist**

- 1) Initial reporting source (name/telephone or address): \_\_\_\_\_  
\_\_\_\_\_
- 2) Name of missing person: \_\_\_\_\_
- 3) Location and date/time last seen: \_\_\_\_\_
- 4) Known intentions or possible actions of missing person: \_\_\_\_\_  
\_\_\_\_\_
- 5) Age and physical description of missing person: \_\_\_\_\_
- 6) Clothing, footgear, and equipment: \_\_\_\_\_
- 7) Physical and mental condition: \_\_\_\_\_
- 8) Knowledge of area: \_\_\_\_\_
- 9) Outdoor experience: \_\_\_\_\_
- 10) Weather conditions (see Weather Information Checklist): \_\_\_\_\_
- 11) Action being taken: \_\_\_\_\_
- 12) Assistance desired, if not obvious: \_\_\_\_\_
- 13) Date/time of initial report: \_\_\_\_\_
- 14) Nearest relative (name/telephone or address): \_\_\_\_\_
- 15) Other pertinent information: \_\_\_\_\_

**MEDICO or MEDEVAC Data Checklist**

- 1) Initial reporting source (parent agency, radio station, name/call sign if craft; name/telephone or address if person): \_\_\_\_\_  
\_\_\_\_\_
- 2) Patient name, nationality, age, sex, race: \_\_\_\_\_
- 3) Patient symptoms: \_\_\_\_\_  
\_\_\_\_\_
- 4) Medication given: \_\_\_\_\_
- 5) Standard medicine chest or other medication available: \_\_\_\_\_
- 6) Radio frequencies in use, monitored, or scheduled: \_\_\_\_\_
- 7) Craft description: \_\_\_\_\_
- 8) Vessel's local agent: \_\_\_\_\_
- 9) Craft's last port of call, destination, estimated time of arrival (ETA): \_\_\_\_\_
- 10) Assistance desired, if not obvious (local medical advice): \_\_\_\_\_
- 11) Assistance being received: \_\_\_\_\_
- 12) Other pertinent information: \_\_\_\_\_

**Weather Information**

1) Visibility and any obscuration such as fog, smoke, or haze, and the time of any recent changes:

\_\_\_\_\_

2) Water/snow surface conditions such as sea state/powder: \_\_\_\_\_

3) Wind direction and velocity, and recent changes: \_\_\_\_\_

4) Cloud cover, ceiling, etc., and recent changes: \_\_\_\_\_

5) Temperature of air and water: \_\_\_\_\_

6) Barometric reading: \_\_\_\_\_

7) Whether rain or snow is falling or has fallen, and the time it began and ended:

\_\_\_\_\_

8) Whether severe weather such as thunderstorms, snow, hail, ice pellets, or freezing rain are occurring or have occurred, and at what times it began or ended:

\_\_\_\_\_

**Man Overboard Data Checklist**

- 1) Date/time of present position: \_\_\_\_\_
- 2) Craft's course/speed and destination: \_\_\_\_\_
- 3) Date/time of man overboard position: \_\_\_\_\_
- 4) Initial reporting source (parent agency, radio station, name/call sign of craft):  
\_\_\_\_\_
- 5) Estimated water temperature: \_\_\_\_\_
- 6) Person's name, age, sex: \_\_\_\_\_
- 7) Person's physical condition and swimming capability: \_\_\_\_\_
- 8) Person's clothing amount and color, including life preserver: \_\_\_\_\_  
\_\_\_\_\_
- 9) Area searched and pattern used by craft on-scene: \_\_\_\_\_  
\_\_\_\_\_
- 10) Intentions of craft on-scene: \_\_\_\_\_
- 11) Assistance being received: \_\_\_\_\_
- 12) Other pertinent information: \_\_\_\_\_

**Alert Phase Data, Distress Phase Data,  
and Overdue Checklists**

**Alert Phase Checklist**

Note: Ensure Uncertainty Phase Checklist items are considered.

- 1) Designate SMC if not already done.
- 2) Issue urgent broadcasts to obtain assistance.
- 3) Obtain information on positions of ships at sea and request assistance as necessary.
- 4) Dispatch SRU(s) to provide assistance.
- 5) Alert direction finder (DF) nets.
- 6) Request Air Traffic Control to obtain assistance from en-route aircraft.
- 7) If disabled unit regains normal operations, monitor until assured of safety.
- 8) When unit is in no danger, cancel broadcasts and notify all concerned.
- 9) Close case when assistance has been completed.
- 10) If situation deteriorates and a unit or person is in grave and imminent danger, advance to distress phase.

**Overdue Aircraft**

- 1) Designate SMC.
- 2) Alert SRU(s).
- 3) Request air traffic control (ATC) units to attempt contact.
- 4) Review any flight plans filed.
- 5) Alert radar and DF nets.
- 6) Have ATC units alert en-route aircraft.
- 7) Alert other agencies.
- 8) Alert adjacent RCCs or other SAR authorities.
- 9) Start search planning.
- 10) Dispatch SRU for initial search.
- 11) Use (as appropriate):
  - a) Notice to airmen (NOTAMs)
  - b) News media broadcasts.
- 12) If located:
  - a) Close case.
  - b) Cancel broadcast and notices.
  - c) Notify all concerned.
- 13) When situation deteriorates and a unit or person is considered to be in grave and imminent danger, advance to distress phase.

**Overdue Vessel**

- 1) Designate SMC.
- 2) Alert SRU(s).
- 3) If submersible, request Navy or other special assistance.
- 4) Complete preliminary communications search and carry out extended communications search.
- 5) Alert other agencies.
- 6) Alert adjacent RCCs or other SAR authorities.
- 7) Start search planning.
- 8) Dispatch SRU for initial search.
- 9) Use (as appropriate):
  - a) Urgent broadcasts
  - b) Hydrological surveys
  - c) Notices to mariners
  - d) News media broadcasts.
- 10) If located:
  - a) Close case.
  - b) Cancel broadcasts and notices.
  - c) Notify all concerned.
- 11) If not located by completion of extended communications search, advance to distress phase.
- 12) When situation deteriorates and a unit or person is considered to be in grave and imminent danger, advance to distress phase.

**Unlawful Interference**

- 1) Alert other agencies, such as appropriate law-enforcement and aviation authorities.
- 2) Alert SRU(s).
- 3) Alert adjacent RCCs or other SAR authorities.
- 4) Alert radar and DF nets.
- 5) Dispatch SRU as requested by other agencies.
- 6) When it is probable that the aircraft is about to make a forced landing or ditch, or has done so, advance to distress phase.

**Distress Phase Checklist**

Note: Ensure Uncertainty and Alert Phase Checklists items are considered.

- 1) Designate SMC if not already done.
- 2) Notify adjacent RCCs or RSCs or other SAR authorities.
- 3) Dispatch SRUs if distress location is known.
- 4) If submersible or underwater habitat, request Navy or other special assistance.
- 5) Dispatch any specialized units needed.
- 6) Develop initial search action plan.
- 7) Provide SRUs with mission information.
- 8) Designate OSC.
- 9) Consider use of multiple OSCs.
  - a) Air OSC
  - b) Surface OSC
  - c) Geographical OSC.
- 10) Assign on-scene frequencies.
- 11) Consider the use of datum marker buoys.
- 12) Ensure briefing of search crews.
- 13) Pass instructions to OSC.
- 14) Request other available agencies provide assistance.
- 15) Query radar and direction-finding stations.
- 16) Issue distress broadcasts.
- 17) Request news media to include urgent requests for information.
- 18) Determine merchant vessel locations, if appropriate (fleet area control and surveillance facility (FACSFAC), automated mutual-assistance vessel rescue system (AMVER)).
- 19) Have ATC unit alert en-route aircraft.
- 20) Maintain communications link with distressed craft.
- 21) Inform distressed unit of action taken.

- 22) Send request for assistance to specific vessels.
- 23) Begin planning for extended search efforts.
- 24) Use computer-assisted search planning tools, if available.
- 25) Establish contact and maintain liaison with distressed craft's operating agency.
- 26) Notify authorities of country of registry of distressed craft.
- 27) Notify accident investigation authorities.
- 28) Maintain records and charts of search activities and estimates of search effectiveness.
- 29) Send required reports.
- 30) Ensure debriefing of SAR crews.
- 31) If search is successful and rescue effected, cancel broadcasts and close case.
- 32) If search is unsuccessful:
  - a) Continue operations until all reasonable effort has been made
  - b) Obtain SAR coordinator permission to suspend search.
- 33) Notify all concerned of actions taken.
- 34) Send required final reports.

**SAR Briefing and Debriefing Forms**

**Briefing**

SAR: \_\_\_\_\_

Date: \_\_\_\_\_

A/C Type & Number: \_\_\_\_\_ Unit: \_\_\_\_\_ Commander: \_\_\_\_\_

Details as to nature of distress or emergency:

Description of Search Object:

1) Type of aircraft or vessel: \_\_\_\_\_

2) Number or name of craft: \_\_\_\_\_

3) Length: \_\_\_\_\_ Width (Wing-Span): \_\_\_\_\_

4) Number on board: \_\_\_\_\_

5) Full description of craft, including color and markings:  
 \_\_\_\_\_  
 \_\_\_\_\_

6) Frequencies of missing craft: \_\_\_\_\_  
 \_\_\_\_\_

**Assigned Search Areas**

Area: \_\_\_\_\_

Type of Search: \_\_\_\_\_ Altitude/Vis: \_\_\_\_\_

Time on Scene: \_\_\_\_\_ Endurance of SRU: \_\_\_\_\_

Commence Search at (Posn): \_\_\_\_\_ and Track (N-S)(E-W): \_\_\_\_\_

**Frequencies:**

1) Controlling Agency: \_\_\_\_\_ 2) Aircraft: \_\_\_\_\_

3) Surface Vessels: \_\_\_\_\_ 4) Others: \_\_\_\_\_

**Progress Reports**

To be passed to: \_\_\_\_\_ every \_\_\_\_\_ hours with weather report included every \_\_\_\_\_ hours.

Special Instructions: \_\_\_\_\_  
 \_\_\_\_\_

**Debriefing**

SAR: \_\_\_\_\_ A/C No.: \_\_\_\_\_

Date: \_\_\_\_\_

Point of Departure: \_\_\_\_\_ Point of Landing: \_\_\_\_\_

Launch Time: \_\_\_\_\_ On Scene: \_\_\_\_\_ Off Scene: \_\_\_\_\_ Landed: \_\_\_\_\_

Area Actually Searched: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Type of Search: \_\_\_\_\_ Altitude/Vis: \_\_\_\_\_

Terrain or Sea State: \_\_\_\_\_ Number of Observers: \_\_\_\_\_

Weather Conditions in Search Area (Vis, Wind Velocity, Ceiling, etc.): \_\_\_\_\_

\_\_\_\_\_

Object of Search: (located/not located) \_\_\_ at Position: \_\_\_\_\_

\_\_\_\_\_

Number and Condition of Survivors: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Sightings and/or Other Reports: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Telecommunications (Discuss quality of communications and/or any changes other than briefed): \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Remarks (To include any action taken on search, any problems, criticism, suggestions):

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_  
Date/Time (Local)

\_\_\_\_\_  
Aircraft/Boat Commander

**Abbreviated SAR Briefing and Debriefing  
Forms**

**Briefing**

SAR: \_\_\_\_\_

Date: \_\_\_\_\_

A/C Type and Number: \_\_\_\_\_ Commander: \_\_\_\_\_

Launch Time: \_\_\_\_\_

Search Area: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Search Altitude: \_\_\_\_\_ Sweep Width: \_\_\_\_\_

Type of Search: \_\_\_\_\_

Remarks: \_\_\_\_\_

\_\_\_\_\_

**Debriefing**

Area Actually Searched: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Search Time: \_\_\_\_\_ Transit Time: \_\_\_\_\_

Percent of Area Covered: \_\_\_\_\_ % from assigned search area.

Probability of Detection for Area Assigned: \_\_\_\_\_ %

Remarks: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**SAR Briefing and Tasking Form — Maritime Search**

- 1) DTG (local) \_\_\_\_\_
- 2) SAR (incident name) \_\_\_\_\_
- 3) Search object: \_\_\_\_\_
  - a) Type (Aircraft/Vessel/Other — Delete as necessary): \_\_\_\_\_
  - b) Name: \_\_\_\_\_
  - c) Registration: \_\_\_\_\_
  - d) Tonnage: \_\_\_\_\_
  - e) Description: (Color, markings, superstructure, characteristics) \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
  - f) Owner/Operator/Agent: \_\_\_\_\_
  - g) P.O.B.: \_\_\_\_\_
  - h) Emergency equipment carried: \_\_\_\_\_  
 \_\_\_\_\_
- 4) Nature of Distress or Emergency (brief description): \_\_\_\_\_  
 \_\_\_\_\_
- 5) Search Area:
  - a) Area corner points (Lat. & Long.): \_\_\_\_\_
  - b) CSP (commence search point): \_\_\_\_\_
  - c) Direction of creep: \_\_\_\_\_
  - d) Major axis: \_\_\_\_\_
  - e) Requested coverage factor (C): \_\_\_\_\_
  - f) Requested track spacing (S): \_\_\_\_\_
  - g) Requested search pattern (P,S,V,C,T): \_\_\_\_\_
- 6) Other SAR facilities to be engaged in adjacent areas: \_\_\_\_\_
  - a) Aircraft/Altitude: \_\_\_\_\_

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- b) Vessels: \_\_\_\_\_
- c) Land Parties: \_\_\_\_\_
- 7) Frequencies and call signs to be used for communication with:
  - a) RCC/MRSC/ARSC/OSC/(Delete as necessary): \_\_\_\_\_
  - b) Other search aircraft: \_\_\_\_\_
  - c) Other search vessels: \_\_\_\_\_
  - d) Land parties: \_\_\_\_\_
  - e) Ship or craft in distress/survivors: \_\_\_\_\_
- 8) Action on sighting the search object (delete as necessary):
  - a) Report to: \_\_\_\_\_
  - b) If unable to effect rescue, direct other vessels and/or aircraft to the scene.
  - c) Remain on-scene until relieved, forced to return, or rescue has been effected.
- 9) Progress reports should be passed to \_\_\_\_\_ every \_\_\_\_ hours.
- 10) Special instructions:

**Sighting Report Form**

**GENERAL INFORMATION**

- 1) CASE NUMBER: \_\_\_\_\_
- 2) NAME OF PERSON REPORTING: \_\_\_\_\_
- 3) ADDRESS: \_\_\_\_\_
- 4) TELEPHONE: \_\_\_\_\_
- 5) OCCUPATION: \_\_\_\_\_
- 6) DESCRIPTION OF SIGHTING
  - a) TYPE OF CRAFT: \_\_\_\_\_
  - b) COLOR: \_\_\_\_\_
  - c) TRIM: \_\_\_\_\_
- 7) TIME OF SIGHTING: \_\_\_\_\_ LOCAL DATE: \_\_\_\_\_

\*\*\*\*\*

**AIRCRAFT**

- 1) WHEELS/FLOATS/SKIS: \_\_\_\_\_
- 2) HIGH/LOW WING: \_\_\_\_\_
- 3) NUMBER OF ENGINES: \_\_\_\_\_
- 4) DID ENGINES SOUND NORMAL: \_\_\_\_\_
- 5) APPARENT ALTITUDE: \_\_\_\_\_
- 6) DIRECTION: \_\_\_\_\_
- 7) TURNING: \_\_\_\_\_
- 8) CLIMBING/DESCENDING: \_\_\_\_\_
- 9) OTHER A/C SIGHTED: \_\_\_\_\_
  - a) TYPE: \_\_\_\_\_
  - b) DESCRIPTION: \_\_\_\_\_
  - c) TIME: \_\_\_\_\_
- 10) PARACHUTES SIGHTED: \_\_\_\_\_
  - a) NUMBER/COLOR: \_\_\_\_\_
- 11) DO A/C PASS REGULARLY: \_\_\_\_\_

\*\*\*\*\*

**VESSELS**

- 1) HULL TYPE: \_\_\_\_\_
- 2) SUPERSTRUCTURE: \_\_\_\_\_
- 3) ENGINES/SALES: \_\_\_\_\_
- 4) DID ENGINES SOUND NORMAL: \_\_\_\_\_
- 5) LOCATION: \_\_\_\_\_
- 6) DIRECTION: \_\_\_\_\_
- 7) TURNING: \_\_\_\_\_
- 8) OTHER VESSELS SIGHTED: \_\_\_\_\_
  - a) TYPE: \_\_\_\_\_
  - b) DESCRIPTION: \_\_\_\_\_
  - c) TIME: \_\_\_\_\_

\*\*\*\*\*

**WEATHER**

- 1) WEATHER AT TIME OF SIGHTING: \_\_\_\_\_
- 2) RAINING/SNOWING: \_\_\_\_\_
- 3) THUNDERSTORM: \_\_\_\_\_
- 4) WIND/SEA STATE: \_\_\_\_\_
- 5) REMARKS: \_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*

**RECORDER**

- 1) DATE/TIME RECEIVED: \_\_\_\_\_
- 2) RECEIVED BY: \_\_\_\_\_
- 3) RECEIVED DIRECT OR RELAYED: \_\_\_\_\_
- 4) ASSESSED VALIDITY OF REPORT: \_\_\_\_\_
- 5) ACTION TAKEN: \_\_\_\_\_

**SITREPS**

## Situation Report Formats and Examples

SITREPs are used to pass information about a particular SAR incident. RCCs use them to keep other RCCs and appropriate agencies informed of cases that are of immediate or potential interest. The OSC uses SITREPs to keep the SMC aware of mission events. Search facilities use SITREPs to keep the OSC informed of search progress. The OSC addresses SITREPs only to the SMC unless otherwise directed. The SMC may address SITREPs to as many agencies as necessary, including the sensors and controls (SC), and other RCCs and RSCs, to keep them informed. SITREPs prepared by an SMC usually include a summary of information received from OSCs. Often a short SITREP is used to provide the earliest notice of a casualty or to pass urgent details when requesting assistance. A more complete SITREP is used to pass amplifying information during SAR operations. Initial SITREPs should be transmitted as soon as some details of an incident become clear and should not be delayed unnecessarily for confirmation of all details.

For SAR incidents where pollution or threat of pollution exists as a result of a casualty, the appropriate agency tasked with environmental protection should be an information addressee on SITREPs.

### SITREP Format

A SITREP format has been adopted internationally that is intended for use, along with the standard codes found on the following pages, for international communications between RCCs.

**Short form** — To pass urgent essential details when requesting assistance, or to provide the earliest notice of casualty, the following information should be provided:

TRANSMISSION (Distress/urgency)

DATE AND TIME (UTC or Local Date Time Group)

FROM: (Originating RCC)

TO:

SAR SITREP (NUMBER) (To indicate nature of message and completeness of sequence of SITREPs concerning the casualty)

- a. IDENTITY OF CASUALTY (name/call sign, flag state/country)
- b. POSITION (latitude/longitude)
- c. SITUATION (type of message, e.g., distress/urgency; date/time; nature of distress/urgency, e.g., fire, collision, medico)
- d. NUMBER OF PERSONS
- e. ASSISTANCE REQUIRED
- f. COORDINATING RCC

**Full form** — To pass amplifying or updating information during SAR operations, the following additional sections should be used as necessary:

- g. DESCRIPTION OF CASUALTY (Physical description, owner, cargo carried, passage from/to, life-saving equipment carried)
- h. WEATHER ON SCENE (Wind, sea/swell state, air/sea temperature, visibility, cloud cover/ceiling, barometric pressure)

- i. INITIAL ACTIONS TAKEN (by casualty and RCC)
- j. SEARCH AREA (as planned by RCC)
- k. COORDINATING INSTRUCTIONS (OSC designated, units participating, communications)
- l. FUTURE PLANS
- m. ADDITIONAL INFORMATION (include time SAR operation terminated)

**Notes:**

- 1) Each SITREP concerning the same casualty should be numbered sequentially.
- 2) If help is required from the addressee, the first SITREP should be issued in short form if remaining information is not readily available
- 3) When time permits, the full form may be used for the first SITREP, or to amplify it.
- 4) Further SITREPs should be issued as soon as other relevant information has been obtained. Information already passed should not be repeated.
- 5) During prolonged operations, “no change” SITREPs, when appropriate, should be issued at intervals of about 3 hours to reassure recipients that nothing has been missed.
- 6) When the incident is concluded, a final SITREP is issued as confirmation.

Sample SITREP:

PRIORITY

P 152230Z SEP 02 ZYB PSN 045095Q23

FM USS TARAWA

TO FACSFAC SAN DIEGO CA//03//

INFO COMTHIRDFLT

HELSEACOMBATRON THREE//N60//

UNCLAS//NO3700//

MSGID/GENADMIN/USS MCCAMPBELL//

SUBJ/SAR SITREP ONE//

POC/LT JUSTIN HAWKINS/SAR OFFICER/-/LOC: USS TARAWA/EMAIL:  
SAROFFICER@TARAWA.NAVY.MIL//

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RMKS/1. FOLLOWING SAR INCIDENT INFO PROVIDED:

- a. WILDGOOSE 15
- b. 32-20N 118-20W
- c. DISTRESS/152200Z/AIRCRAFT DITCHING
- d. 4
- e. REQUEST FACSFAC SAN DIEGO CA ASSUME SMC AND CONDUCT SEARCH
- f. FACSFAC SAN DIEGO
- g. CH-46E/MAG 42/NAS NORTH ISLAND EN ROUTE USS BONHOMME RICHARD/12 MAN LIFE RAFT, CREW EQUIPPED WITH SV-2s
- h. WEATHER ON SCENE UNKNOWN
- i. AIRCRAFT ISSUED MAYDAY BROADCAST ON 243.0 MHZ THAT WAS HEARD BY SHIP'S HDC. PILOT OF DISTRESS AIRCRAFT GAVE POSITION, STATED BOTH ENGINES FLAMED OUT AND DESCENDING THROUGH 1000 FEET WITH INTENTIONS TO DITCH.
- j. NO SEARCH ASSETS AVAILABLE.//  
BT

**Code of Standard Phrases for Use between RCCs and RSCs**

<b>RJA</b>	Confirm you are controlling SAR action
<b>RJB</b>	I am controlling SAR action
<b>RJC</b>	Casualty reported to me: 1: overdue    4: aground 2: sinking    5: taking water 3: on fire    6: requiring tow
<b>RJD</b>	Cargo is: 1: dangerous 2: not dangerous 3: oil
<b>RJE</b>	Casualty carries ____ (number of persons on board) 1: ____ (number) lifeboats 2: ____ (number) life rafts
<b>RJF</b>	Casualty name, call sign and flag state as indicated 1: Owners/agents as indicated
<b>RJG</b>	MAYDAY/PAN PAN broadcast has been initiated by ____ (call sign)
<b>RJH</b>	Following rescue/search craft are/have been launched 1: Surface vessel ____ (call sign) ETA on-scene . . . 2: SAR helicopter ____ (call sign) ETA on-scene... 3: SAR aircraft ____ (call sign) ETA on-scene...
<b>RJI</b>	SAR craft (as indicated) can be made available from ____ (location) at ____ (time)
<b>RJJ</b>	SAR craft (as indicated) cannot be made available until ____ (time)
<b>RJK</b>	Number of SAR craft available at this time is ____ (number)
<b>RJL</b>	Can you make SAR craft (as indicated) available now or in near future
<b>RJM</b>	Request details of SAR craft that can be made available including ETA on-scene
<b>RJN</b>	SAR craft ____ (call sign) is returning to base 1: Will be replaced by ____ (call sign) ETA... 2: Will not be replaced
<b>RJO</b>	Designated co-coordinator surface search is ____ (call sign)
<b>RJP</b>	Designated OSC is ____ (call sign)
<b>RJQ</b>	Following vessels are in area searching/standing by casualty ____ (call signs)
<b>RJR</b>	Search datum is ____ (lat) ____ (long) 1: New search datum is ____ (lat) ____ (long)

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<b>RJS</b>	Search area is bounded by ____ (lat) ____ (long) 1: New search area is bounded by (____)
<b>RJT</b>	SAR aircraft is/was over casualty and indicates no sign of life
<b>RJU</b>	SAR aircraft is/was over casualty and indicates ____ (number) survivors sighted
<b>RJV</b>	Survivors have taken to ____ (number) liferaft(s)
<b>RJW</b>	At what time will ____ (call sign) be on-scene
<b>RJX</b>	(Not assigned)
<b>RJY</b>	(Not assigned)
<b>RJZ</b>	(Not assigned)
<b>RKA</b>	SAR helicopter (call sign) will be in position to attempt rescue at ____ (time)
<b>RKB</b>	Rescue attempt successful (number) survivors uplifted and being taken to ____ (location)
<b>RKC</b>	Rescue attempt unsuccessful. Will make further attempt shortly
<b>RKD</b>	Rescue attempt unsuccessful ____ (call sign) does not intend to make further attempt at this time because of conditions, endurance, other reasons not known
<b>RKE</b>	Further rescue attempt will be made when conditions improve or at ____ (time)
<b>RKF</b>	How many survivors are there 1: Number of survivors recovered is ____ (number)
<b>RKG</b>	How many missing persons 1: Number of missing persons is ____ (number)
<b>RKH</b>	____ (number) bodies located in position...
<b>RKI</b>	____ (number) life rafts located in position...
<b>RKJ</b>	____ (number) survivors located in position...
<b>RKK</b>	____ (number) survival craft located with no sign of life has/have been sunk to avoid confusion
<b>RKL</b>	____ (number) survival craft located by ____ (call sign) has/have been sunk after recovery of ____ (number) survivors
<b>RKM</b>	All survival craft located and ____ (number) survivors recovered
<b>RKN</b>	All survival craft located. No survivors
<b>RKO</b>	For how long do you intend to continue search

- RKP** Consider search should continue for:  
1: survivors  
2: bodies  
3: wreckage  
4: survival craft
- RKQ** (Not assigned)
- RKR** Do not consider further search can be of any benefit
- RKS** Intend continuing search
- RKT** Do not expect search to continue after \_\_\_\_\_(time)
- RKU** Incident is now closed
- RKV** Cancel MAYDAY or PAN PAN message
- RKW** Intend transferring control of incident to \_\_\_\_\_(call sign)
- RKX** (Not assigned)
- RKY** (Not assigned)
- RKZ** (Not assigned)

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# APPENDIX C

## RESCUE / SIGNAL / MEDICAL INSTRUCTION

MAKE SYMBOLS AT LEAST 8FT LONG OF PARACHUTE STRIPS, WOOD, STONES, OR MEN LYING DOWN CONTRASTING TO BACKGROUND.

INTERNATIONAL GROUND - AIR EMERGENCY CODE	
I	REQUIRE DOCTOR SERIOUS INJURIES
II	REQUIRE MEDICAL SUPPLIES
X	UNABLE TO PROCEED
F	REQUIRE FOOD AND WATER
<<	REQUIRE FIREARMS AND AMMUNITION
□	REQUIRE MAP AND COMPASS
⋮	REQUIRE SIGNAL LAMP WITH BATTERY AND RADIO
L	REQUIRE FUEL AND OIL
W	REQUIRE ENGINEER
K	INDICATE DIRECTION TO PROCEED
↑	AM PROCEEDING IN THIS DIRECTION
↖	WILL ATTEMPT TAKE-OFF
⊂	AIRCRAFT SERIOUSLY DAMAGED
⊃	ALL WELL
△	PROBABLY SAFE TO LAND HERE
N	NO
Y	YES
JL	NOT UNDERSTOOD

GROUND SEARCH PARTIES	
OPERATION IS ENDED; RETURN TO YOUR BASE	LLL
WE HAVE FOUND ALL PERSONNEL	lll
WE HAVE FOUND ONLY SOME PERSONNEL	lll
WE ARE NOT ABLE TO CONTINUE, RETURNING TO BASE	XX
HAVE DIVIDED INTO TWO GROUPS, EACH PROCEEDING IN DIRECTION INDICATED	↔
INFORMATION RECEIVED THAT AIRCRAFT IS IN THIS DIRECTION	↔
NOTHING FOUND, WILL CONTINUE SEARCH	NN

AIRCRAFT ACKNOWLEDGMENT	
THE RESCUE PILOT WILL SIGNAL HIS ANSWER EITHER BY DROPPING A NOTE OR IN THE FOLLOWING MANNER	
MESSAGE RECEIVED AND UNDERSTOOD 1. ROCKING FROM SIDE TO SIDE, OR 2. MAKING GREEN FLASHES ON SIGNALING LAMP	MESSAGE NOT UNDERSTOOD 1. MAKING A COMPLETE RIGHT-HAND CIRCUIT, OR 2. MAKING RED FLASHES ON SIGNALING LAMP
AFFIRMATIVE (YES) ANSWER DIPPING THE NOSE OF HIS PLANE	NEGATIVE (NO) ANSWER FISH TAILING HIS PLANE

PANEL SIGNALS				
NEED MEDICAL ATTENTION	NEED QUININE OR ATABRINE	NEED FOOD AND WATER	NEED FIRST AID SUPPLIES	NEED WARM CLOTHING
NEED GAS AND OIL PLANE IS FLAMABLE	FLAME IS FLAMABLE NEED TOOLS	WILL ATTEMPT TO TAKE-OFF	SHOULD WE WAIT FOR RESCUE PLANE	DO NOT ATTEMPT TO TAKE-OFF
ALL TO LAND IN THIS DIRECTION	DO NOT ATTEMPT LANDING	WALK THIS DIRECTION	Legend Silver Orange	

INSTRUCTIONS FOR THE TREATMENT OF WOUNDS	
<p><b>SUCKING CHEST WOUND</b></p> <p>A CHEST WOUND THAT SUCKS AIR CAN BE FATAL UNLESS TREATED PROPERLY. MAKE A PRESSURE BANDAGE OVER THE OPENING AND ATTEMPT TO MAKE THE BANDAGE AS AIRTIGHT AS POSSIBLE WITH PLENTY OF ADHESIVE TAPE.</p>	<p><b>DIRECT PRESSURE</b></p>
<p><b>BURNS</b></p> <p>A FIRST-DEGREE BURN IS JUST PAINFUL REDDENED SKIN. TAKE PAIN RELIEF MEDICATION AND KEEP THE AREA CLEAN. A SECOND-DEGREE BURN HAS BLISTERS. IN ADDITION, THE TREATMENT IS THE SAME, BUT DO NOT BREAK THE BLISTERS UNLESS YOU MUST IN ORDER TO WALK. A THIRD-DEGREE BURN MAY BE WHITE AND PAINLESS. IT IS THE MOST SEVERE TYPE AND SHOULD BE COVERED WITH YOUR CLEANEST DRESSING.</p>	<p><b>BLEEDING TOURNIQUET TECHNIQUE</b></p> <p><b>PERMANENT TOURNIQUET</b></p>
<p><b>BASIC WOUND CARE</b></p> <p>(1) TREAT EVERY BREAK IN THE SKIN AS SOON AS POSSIBLE. (2) RINSE DIRT AND FOREIGN MATTER AWAY WITH LOTS OF PURIFIED WATER. (3) PUT YOUR CLEANEST DRESSING NEXT TO THE SURFACE OF THE WOUND. (4) BANDAGE THE WOUND ENOUGH TO PREVENT FURTHER CONTAMINATION OR INJURY. (5) AN INJURED PART WILL SWELL. CHECK FOR FEELING, PULSE, AND COLOR FREQUENTLY AFTER USING ANY BANDAGE THAT ENCLOSES A LIMB TO AVOID A TOURNIQUET EFFECT.</p>	<p><b>CONTROL BLEEDING BY DIRECT PRESSURE ON THE WOUND, USE OF PRESSURE POINTS, ELEVATING THE INJURED PART ABOVE THE LEVEL OF THE HEART, OR TOURNIQUET. USE TOURNIQUET ONLY WHEN ALL ELSE FAILS AND THE BLEEDING IS ARTERIAL, GRIETING BRIGHT RED BLOOD. ONCE APPLIED, DO NOT REMOVE THE TOURNIQUET UNTIL YOU CAN GET TO A DOCTOR. PLACE THE TOURNIQUET A FEW INCHES ABOVE THE WOUND IN THE DIRECTION OF THE HEART; TIGHTEN UNTIL ALL BLOOD FLOW STOPS AND NO PULSE IS FELT BELOW THE TOURNIQUET. AFTER SEVERAL HOURS, IF NO MEDICAL ATTENTION IS RECEIVED, GANGRENE WILL SET IN AND MUST BE ACCEPTED. IT IS POSSIBLE THAT THE PORTION OF THE LIMB BELOW THE TOURNIQUET WILL HAVE TO BE AMPUTATED, BUT AS LONG AS THE TOURNIQUET IS LEFT IN PLACE, ONE CAN GO FOR SEVERAL WEEKS WITH OUT THE GANGRENE SPREADING PAST THE TOURNIQUET AND CAUSING A FATALITY.</b></p> <p><b>BEWARE OF APPLYING A TOURNIQUET WHEN YOU DO NOT INTEND TO DO SO. CHECK ANY LIMB WITH AN ENVELOPING BANDAGE FREQUENTLY FOR PULSE, COLOR, &amp; FEELING.</b></p>
<p><b>EXHAUSTION</b></p> <p>EVEN THE FITTEST INDIVIDUAL CAN EXHAUST HIMSELF IN A SEVERE ENVIRONMENT. CONSERVE YOUR ENERGY WHEN POSSIBLE. DRINK PLENTY OF WATER. REST IN THE SHADE AND TAKE SALT TABLETS, IF AVAILABLE.</p>	<p><b>FRACTURES</b></p> <p>USE BASIC WOUND CARE TO CLEAN AND DRESS ANY SKIN BREAKS. THEN IMMOBILIZE THE JOINT ABOVE AND THE JOINT BELOW THE FRACTURE SITE WITH A GOOD SPLINT OVER THE BANDAGE. CHECK THE LIMB FOR PULSE, FEELING, AND COLOR OFTEN SO THAT THE SWELLING LIMB DOES NOT MAKE THE BANDAGE TIGHT ENOUGH TO BECOME A TOURNIQUET.</p>

BODY SIGNALS	
	NEED MEDICAL ASSISTANCE URGENT. LIE PRONE.
	PICK US UP PLANE ABANDONED
	LAND HERE. (POINT IN DIRECTION OF LANDING)
	CAN PROCEED SHORTLY WAIT IF PRACTICABLE
	ALL O.K. DO NOT WAIT
	DO NOT ATTEMPT TO LAND HERE
	NEED MECHANICAL HELP OR PARTS - LONG DELAY
	USE DROP MESSAGE
	AFFIRMATIVE (YES)
	NEGATIVE (NO)
	OUR RECEIVER IS OPERATING

## APPENDIX C

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## APPENDIX D

# Stock Numbers of SAR Equipment

The SAR model manager (HSC-3) is the CFA for SAR equipment not incorporated into the Navy supply system. Single source procurement by open purchase for the equipment listed in the appendix has been approved by the CNO.

Medical supplies for the Level "A" and Level "B" medical kits should be ordered by individual commands through the TYPE/WING Commanders and/or local medical facility. Squadrons/ships medical department personnel should assist commands when ordering medical supplies. Coordination with local medical facilities may help in identifying new NSN's or obsolete or canceled NSN's. Report any changes noted VIA change recommendation to SARMM attention Medical Coordinator.

### Note

Verify part numbers and stock numbers prior to ordering the listed SAR equipment.

### SOURCE FOR OPEN-PURCHASE ITEMS

NORTHWEST RIVER SUPPLIES 2009 S. MAIN, MOSCOW, ID 83843 PHONE: (800) 635-5202 FAX (208) 883-4787	MARTECH INC. 813 N.W. 1ST STREET FT. LAUDERDALE, FL 33302
LIFESAVING SYSTEM CORPORATION 220 ELSBERRY ROAD APOLLO BEACH, FL 33572-2289 PHONE: (813) 645-2748 FAX: (813) 645-2768 WEB: WWW.LIFESAVINGSYSTEMS.COM	SKY GENIE SYSTEMS DESCENT CONTROL INC. P.O. BOX 6405 FT. SMITH, AR 72906 PHONE: (800) 643-2539 FAX (501) 646-4628
DIVERS DEN PANAMA 4833 EAST BUS, HIGHWAY 98 P.O. BOX 10606 PANAMA CITY, FL 32404-1606 PHONE: (800) 272-4777	RECREATION EQUIPMENT INC COMMERCIAL SALES P.O. BOX 1700 SUMNER, WA 98390 PHONE: (800) 258-4567
HARVEY SKIN DIVING SUITS INC., SOUTH 252ND STREET KENT, WA 98032 PHONE: (206) 824-1114	CMC RESCUE PO DRAWER 6870 SANTA BARBARA, CA 93160-6870 PHONE: (800) 235-5741 WEB: WWW.CMCRESCUE.COM
LIBERTY MOUNTAIN SPORTS 4375W 1980S SUITE 100 SALT LAKE CITY, UT 84104 PHONE: (800) 366-2666	OMNIGLOW CORPORATION 96 WINDSOR STREET WEST SPRINGFIELD, MA 01089 PHONE: (800) 762-7548 EXT 515
BILLY PUGH CO. INC 1415 N. WATER ST CORPUS CHRISTI, TX 78401-1543 PHONE: (361) 884-9351	MUSTANG SURVIVAL MANUFACTURING, INC 222 JULIANNA STREET P.O. BOX 520 ELIZABETH, WV 26143 PHONE: (304) 275-3306
U.S.I.A MILITARY DEFENSE DIVISION (CODE 49772) 1600 RAILROAD AVE ST. HELENS, OREGON 97051-3133 PHONE: (800) 247-8070 WEB: WWW.USIA.COM	IRON DUCK 20 VETERANS DRIVE CHICOPEE, MA 01022 USA PHONE: (800) 669-6900 WEB: WWW.IRONDUCK.COM

**PRIME VENDORS**

<p>AQUA TECH DIVE CENTER 1800 LOGAN AVENUE SAN DIEGO, CA 92113 PHONE: (619) 235-9098 FAX: (619) 237-1886 WEB: WWW.DIVECENTER.COM</p>	<p>MAR-VEL UNDERWATER EQUIPMENT 7100 AIRPORT HIGHWAY PENNSAUKEN, NJ 08109-4302 PHONE: (800) 325-5711 WEB: WWW.MAR-VEL.COM</p>
<p>AMRON INTERNATIONAL 759 W. 4TH AVE. ESCONDIDO, CA 92025 PHONE: (760) 746-3834 MIL PHONE: (877) 462-6700 FAX: (760) 746-1508 EMAIL: SALES@AMRONINT.COM WEB: WWW.AMRONINTL.COM POC: JIMMY PAGE, EXT 104</p>	<p>ATLANTIC DIVING SUPPLY INC. VIRGINIA BEACH, VA PHONE: (757) 481-7758 WEB:WWW.ATLANTICDIVINGSUPPLY.COM</p>
<p>DYNAMED 6300 YARROW DRIVE CARLSBAD, CA 92009-1597 PHONE: 1-800-854-2706 FAX: 1-800-662-3962</p>	<p>LONDON BRIDGE TRADING CO. 3509 VIRGINIA BEACH BLVD VIRGINIA BEACH, VA 23451 PHONE: (757) 498-0207</p>
<p>LIFE SUPPORT PRODUCTS INC. P.O. BOX 19569 IRVINE, CA 29713 PHONE: 1-800-225-4577</p>	<p>BOUNDTREE 2405 SOUTH INDUSTRIAL PARK AVE TEMPE, AZ 85282 PHONE: 1-800-453-1264 EXT. 6156</p>
<p>EMERSON KNIVES, INC P.O. BOX 4180 TORRANCE, CA 90510-4180 PHONE: (310) 212-7455 WEB: WWW.EMERSONKNIVES.COM</p>	<p>U.S. DIVERS 2340 COUSTEAU COURT VISTA, CA 92081 PHONE: (760) 597-5081 WEB: WWW.AQUALUNG.COM/MILITARY/DATASHEETS.HTML</p>
<p>PIGEON MOUNTAIN INDUSTRIES PO BOX 803 LAFAYETTE, GA 30728 PHONE: (888) 764-1437 WEB: WWW.PMIROPE.COM</p>	<p>DRIFIRE PERFORMANCE WEAR 50 NORTH AVENUE, SUITE B ROSELLE, IL 60172 PHONE: (866) 266-4035 WEB: WWW.DRIFIRE.COM</p>
<p>NORTH AMERICAN RESCUE, INC. 35 TEDWALL COURT GREER, SC 29650-4791 PHONE: (864) 675-9800 FAX: (864) 675-9880 EMAIL: INFO@NARESCUE.COM WEB: WWW.NARESCUE.COM</p>	<p>GIBSON-BARNES (Formerly Flightsuits Unlimited) 1900 WELD BLVD #140 EL CAJON, CA 92020 PHONE: 1-800-440-5904 WEB: WWW.FLIGHTSUITS.COM</p>

**AVIATION AND SURFACE RESCUE SWIMMER EQUIPMENT**

NOMENCLATURE	PART NUMBER/ SIZE	NSN OR APPROVED SOURCE	QUANTITY
WET SUIT ENSEMBLE (BLACK)	N/A	PROCURE ALL WET SUIT ENSEMBLE ITEMS FROM THE PRIME VENDOR LISTING	
a. JACKET	MEN's MNP452-GL-S -M -ML -L -XL -XXL  WOMEN's FMNP452-4GL-S -M -ML -L -XL -XXL	4220-01-441-1272 -1359 -1366 -1372 -1573 -1574  4220-01-441-1757 -1768 -1802 -1812 -1847 -1934	
b. TROUSERS (FARMER JOHN)	MNPFJ442-1GL-S -M -ML MEN's -L -XL -XXL  FMNPFJ42-1GL-S -M -ML WOMEN's -L -XL -XXL	4220-01-441-3389 -3391 -3424 -3425 -3488 -3495  4220-01-441-3499 -3502 -3683 -3686 -3688 -3691	
c. ONE-PIECE SHORTY	MNP461-GL-S -M -ML MEN's -L -XL -XXL  FMNP4611-GL-S -M -ML WOMEN's -L -XL -XXL	4220-01-441-2321 -2327 -2379 -2385 -2471 -2475  4220-01-441-2490 -2502 -2864 -2867 -2870 -2874	
d. BOOTS			

AVIATION AND SURFACE RESCUE SWIMMER EQUIPMENT (CONT.)

NOMENCLATURE	PART NUMBER/ SIZE	NSN OR APPROVED SOURCE	QUANTITY
e. GLOVES (BLACK NEOPRENE)	WARM-WATER ENVIRONMENTS  (2MM) DEP-3321-1 (XS) -2 (S) -3 (M) -4 (L) -5 (XL)  COLD-WATER TITANIUM  (3 MM) P/N 33201-1 (XS) -2 (S) -3 (M) -5 (L) -6 (XL)  (5MM) P/N 35201-1 (XS) -2 (S) -3 (M) -5 (L) -6 (XL)	4220-01-441-2885 -3369 -2898 -3399 -3423  OPEN-PURCHASE AMRON INTERNATIONAL  OPEN-PURCHASE AMRON INTERNATIONAL	
f. HOOD          HOOD (6.5 mm)	MNP601-GL-XS -S -M -ML -L -XL -XXL  DEP-9240-2 (sm) 3 (M) 5 (L) 6 (XL) 7 (XXL)	4220-01-441-2912 -2920 -2925 OPEN-PURCHASE ONLY AMRON INTL -2984 -2999 OPEN-PURCHASE ONLY AMRON INTL  OPEN-PURCHASE THROUGH AMRON INTERNATIONAL	
g. ONE-PIECE SHORTY (INSTRUCTOR ORANGE)	MNT1462-GL-S -M -ML MEN's -L -XL -XXL  FMNT1462-GL-S -M -ML WOMEN's -L -XL -XXL	4220-01-441-3852 -3855 -3861 -3864 -4283 -4286  4220-01-441-2491 -4302 -4344 -4351 -4356 -4813	

AVIATION AND SURFACE RESCUE SWIMMER EQUIPMENT (CONT.)

NOMENCLATURE	PART NUMBER/ SIZE	NSN OR APPROVED SOURCE	QUANTITY
MASK, U.S. DIVERS	5026-00	4220-01-225-1611	1 EA
SHERWOOD MAGNUM 4	SWMA25	DIVERS DEN PANAMA (AUTHORIZED ONLY FOR INDIVIDUALS EVALUATED WITH A SIZING PROBLEM FROM THE CURRENT MASK)	
a. CHEMLIGHT ATTACHMENT BAR	TTLA-7171	4220-01-389-0962	1 EA
b. CHEMLIGHT ATTACH CLAMP	2019100-0707	5340-00-964-2557	1 EA
c. SCREW	NAS602-8	5340-00-964-2557	
d. NUT (SELF-LOCKING)	MS21044CO8	5310-00-982-6814	
e. CHEMLIGHT ATTACH KIT (INCLUDES 10 CLAMPS, NUTS, BOLTS)		PRIME VENDORS	1 EA
f. MASK STRAP	5084-02	4220-01-227-7508	1 EA
g. SNORKEL, U.S. DIVERS	7369-30	4220-01-227-7503	1 EA
h. SNORKEL KIT	7316-05	4220-01-228-0946	1 EA
FINS, U.S. DIVERS			1 PAIR
a. MINI ROCKET (S)	6315-00	4220-01-227-6017	
b. ROCKET (L)	6211-00	4220-01-015-6762	
c. SUPER ROCKET (XL)	6216-00	4220-01-220-5816	
d. XXL SCUBAPRO JET FIN (SIZE 13 AND UP)	25.352.000	4220-01-077-5251	
MEDIUM	25.351.000		
LARGE	25.350.000	OPEN PURCHASE THROUGH AMRON INTERNATIONAL	
e. S-XL ROCKET STRAP AND BUCKLE	6215-02	4220-01-227-7507	
f. ROCKET II FIN (L) SIZE 9-11	621130	OPEN PURCHASE THROUGH US DIVERS	
g. ROCKET II FIN (SUPER) SIZE 12+	621135	OPEN PURCHASE THROUGH US DIVERS	
h. ROCKET II FIN BUCKLE KIT	621131	OPEN PURCHASE THROUGH US DIVERS	
i. ROCKET II FIN REPLACEMENT STRAP	621132	OPEN PURCHASE THROUGH US DIVERS	
j. AMPHIB BOOT SIZE 7 SIZE 8 SIZE 9 SIZE 10 SIZE 11 SIZE 12 SIZE 13 SIZE 14	D93751-07 D93751-08 D93751-09 D93751-10 D93751-11 D93751-12 D93751-13 D93751-14	OPEN PURCHASE THROUGH US DIVERS  Note: AMPHIB boot sizes are based on <b>bare feet</b> and run about 1/2 size smaller than normal boots. If you are wearing socks or a dry suit, add 1/2 to 1 shoe size.	
k. ECHOZIP BOOTS -3MM (SIZES 5-13) -5MM (SIZES 5-13) -6.5MM (SIZES 5-13) -5MM BIGFOOT (SIZES 14-16)	93001 95001 96001 95161	OPEN PURCHASE THROUGH AMRON INTL.  Note: Bootie sizes are based on <b>bare feet</b> and run about 1/2 size smaller than normal boots. If you are wearing socks or a dry suit, add 1/2 to 1 shoe size.	

AVIATION AND SURFACE RESCUE SWIMMER EQUIPMENT (CONT.)

NOMENCLATURE	PART NUMBER/ SIZE	NSN OR APPROVED SOURCE	QUANTITY
I. KORAL KING BOOTS -5MM SIZE 5 SIZE 6 SIZE 7 SIZE 8 SIZE 9 SIZE 10 SIZE 11 SIZE 12 SIZE 13	DEP-95211-5 DEP-95211-6 DEP-95211-7 DEP-95211-8 DEP-95211-9 DEP-95211-10 DEP-95211-11 DEP-95211-12 DEP-95211-13	4220-01-441-3737 4220-01-441-3800 4220-01-441-3827 4220-01-441-3853 4220-01-441-3904 4220-01-441-4086 4220-01-441-4273 4220-01-441-4334 4220-01-441-4368  Note: Bootie sizes are based on <b>bare feet</b> and run about 1/2 size smaller than normal boots. If you are wearing socks or a dry suit, add 1/2 to 1 shoe size.	
RESCUE SWIMMERS FLOTATION DEVICE (LPU-28A/P)	#482 LIFESAVINGS SYSTEM CORP	4220-01-463-0197	1 EA
RADIO (AN/PRC-149 RADIO WITH SWIMMERS CONTROL UNIT (AVIATION ONLY)		AN/PRC-149 RADIO NSN 5826-01-466-0186 P/N 2155-09093-00 C-12631/PRC-149 SWIMMER CONTROL UNIT NSN 5998-01-466-0183 P/N 2155-09073-00	1 EA
AVIATION SWIMMER HARNESS	205	4240-01-395-8413	1 EA
SURFACE SWIMMER HARNESS	204	4240-01-327-6185	1 EA
DIRECT DEPLOYMENT SYSTEM		LIFESAVING SYSTEMS	AS REQ
TRI-SAR HARNESS ASSY	P/N 487XXX	LIFESAVING SYSTEMS SIZE: S, M, L, XL, XXL	
QUICK STROP	P/N 214	LIFESAVING SYSTEMS	
TRI-SAR HARNESS ONLY	P/N 487HXXX	LIFESAVING SYSTEMS	
FLOTATION VEST	P/N 487VB	LIFESAVING SYSTEMS	
AVIATION SAR SWIMMERS DRY SUIT	MSD-565	MUSTANG SURVIVAL MANUFACTURING INC  SMALL: 01-499-3351 MEDIUM: 01-499-3353 LARGE: 01-499-3354 X-LARGE: 01-499-3357  THIS DRY SUIT WILL REPLACE THE SRS DRY SUIT MSD-560 BY ATTRITION	
U.S.I.A MILITARY EXOTHERM FLEECE JUMPSUIT FOR USE WITH THE AVIATION MSD 565 DRY SUIT AND SURFACE MSD 560 DRY SUIT	THREE SIZES  EX1  EX2  EX3	U.S.I.A. MILITARY DEFENSE	
SURFACE SAR SWIMMERS DRY SUIT	MSD-560	MUSTANG SURVIVAL MANUFACTURING INC  SEE ARS DRY SUIT INFO	

AVIATION AND SURFACE RESCUE SWIMMER EQUIPMENT (CONT.)

NOMENCLATURE	PART NUMBER/ SIZE	NSN OR APPROVED SOURCE	QUANTITY
driFIRE DESERT SAND SILK WEIGHT SHIRT	DF2-105LS/MN/S DF2-105LS/MN/M DF2-105LS/MN/L DF2-105LS/MN/XL DF2-105LS/MN/XXL DF2-105LS/MN/XXXL	driFIRE PERFORMANCE WEAR	
CWU-43/P AND CWU-44/P COLD-WEATHER UNDERWEAR	MI-D-85040	ALL DIMENSIONS ARE IN INCHES.	
	FIVE SIZES		
	X-SMALL	CHEST MEASUREMENTS 30 – 33 WAIST MEASUREMENTS 22 – 25 <b>DRAWERS</b> <b>X-SMALL NSN8415-01-043-4036</b> <b>UNDERSHIRT</b> <b>X-SMALL NSN8415-01-043-8375</b>	
	SMALL	CHEST MEASUREMENTS 34 – 37 WAIST MEASUREMENTS 26 – 29 <b>DRAWERS</b> <b>SMALL NSN8415 00-467-4075</b> <b>UNDERSHIRT</b> <b>SMALL NSN8415-00-485-6547</b>	
	MEDIUM	CHEST MEASUREMENTS 38 – 41 WAIST MEASUREMENTS 30 – 33 <b>DRAWERS</b> <b>MEDIUM NSN8415-00-467-4076</b> <b>UNDERSHIRT</b> <b>MEDIUM NSN8415-00-485-6548</b>	
LARGE	CHEST MEASUREMENTS 42 – 45 WAIST MEASUREMENTS 34 – 37 <b>DRAWERS</b> <b>LARGE NSN8415-00-467-4078</b> <b>UNDERSHIRT</b> <b>LARGE NSN8415-00-485-6680</b>		
X-LARGE	CHEST MEASUREMENTS 46 – 49 WAIST MEASUREMENTS 38 – 41 <b>DRAWERS</b> <b>X-LARGE NSN8415-00-467-4100X</b> <b>UNDERSHIRT</b> <b>LARGE NSN8415-00-485-6681</b>		

AVIATION AND SURFACE RESCUE SWIMMER EQUIPMENT (CONT.)

NOMENCLATURE	PART NUMBER/ SIZE	NSN OR APPROVED SOURCE	QUANTITY
REQUIRED EQUIPMENT FOR SWIMMER HARNESS			
a. FLARES, MK 124 (AVIATION SWIMMER ONLY)	N/A	1370-01-030-8330	2 EA
b. CHEMLIGHT, 4 INCH, 6HRS GREEN	A-A-55-434	6260-00-106-7478	4 EA
c. CHEMLIGHT, 6 INCH, 12HRS GREEN	A-A-55134	6260-01-074-4229	4 EA
d. CHEMLIGHT, 30 MIN, YELLOW	A-A-55132	6260-01-074-4230	2 EA
OPTIONS: CHEMLIGHT, 4 INCH, 8 HRS ORANGE CHEMLIGHT, 6 INCH, 12 HRS RED	A-A-55434  A-A-55134	6260-01-282-7630  6260-01-178-5559	AS REQ  AS REQ
e. WHISTLE, E. ORANGE FLAT (MANDATORY FOR SURFACE RESCUE SWIMMERS, OPTIONAL FOR AVIATION RESCUE SWIMMERS)		8465-01-447-8766	1 EA
f. KNIFE, HOOK BLADE (J-KNIFE)	823AS101-1	1670-01-088-4654	1 EA
g. KNIFE, RESCUE SWIMMERS	1681AS500-1	4220-01-278-3007	
h. KNIFE N-SAR (BTS)	N-SAR (BTS)	OPEN PURCHASE FROM: EMERSON KNIVES, INC PO BOX 4180 TORRANCE, CA 90510-4180 PHONE: 310-212-7455	
i. STROBE LIGHT (SDU-39) ALL IN-SERVICE SDU-5/E DISTRESS LIGHTS ARE STILL AUTHORIZED FOR USE UNTIL THEY FAIL INSPECTION	N/A	6230-01-411-8535	1 EA
SDU-39/N CONFIGURATION FOR SAR SWIMMERS ONLY FOR USE ON THE TRI-SAR HARNESS AND HBUS-23/P RESCUE HARNESS		NAVAIR 13-1-6.5	
SDU-39/N BATTERIES	STANDARD "AA" BATTERIES  OR  ENERGIZER L91 LITHIUM BATTERIES OR COMMERCIAL EQUIVALENT	6135-01-447-0950       6135-01-333-6101	

**AVIATION AND SURFACE RESCUE SWIMMER EQUIPMENT (CONT.)**

NOMENCLATURE	PART NUMBER/ SIZE	NSN OR APPROVED SOURCE	QUANTITY
SDU-5/E BATTERIES	BA-5374/U (LITHIUM)	6135-01-455-9646	
	BA-1574-U	MATTHEWS ASSOC, INC. 645 HICKMAN CIRCLE SANFORD, FL 32771 (407) 323-3390	
	LLB-1	ACR ELECTRONICS 5757 RAVENSWOOD RD FT LAUDERDALE, FL 33312-6645 (954) 981-3333	
BLUE. LENS	311	6210-01-327-7277	
KIT BAG, FLYERS	MIL-K-41835	8460-00-606-8366	

**OVERWATER RESCUE EQUIPMENT**

NOMENCLATURE	PART NUMBER/ SIZE	NSN OR APPROVED SOURCE	QUANTITY
HELICOPTER RESCUE EQUIPMENT CASE	1682AS100-1	1680-01-243-4523	
H-60 RESCUE EQUIPMENT CASE	261	LIFESAVING SYSTEMS	
SLING, RESCUE STROP	216-1	1680-01-347-4946	
DOUBLE RESCUE HOOK	MS18027-2A	4030-00-863-8546	
QUICK SPLICE	N/A	MANUFACTURE IAW NAVAIR 13-1-6.5 CH 5	
HOIST GLOVES, HEAVY DUTY	MIL-G-2366	8415-00-268-7871	
	Size 1	-7872	
	Size 2	-7869	
	Size 3	-7870	
	Size 4	-7868	
CREWMAN SAFETY BELTS	MS16070-21	1680-01-133-9975	
CABLE GRIP, CHICAGO	MS90382-1	1680-00-511-2711	
CHEMICAL LIGHT STRAPS	230	4220-01-325-3133	
CHEMLIGHT, 4 INCH, 6HRS GREEN	A-A-55-434	6260-00-106-7478	
CHEMICAL LIGHT, 6 INCH, 3 HRS, INFRARED	BS6260-2-262-022	6260-01-195-9752	
PNEUMATIC HAND TOOL	64A83H1-1	1670-00-177-9260	

OVERWATER RESCUE EQUIPMENT (CONT.)

NOMENCLATURE	PART NUMBER/ SIZE	NSN OR APPROVED SOURCE	QUANTITY
PNEUMATIC HAND TOOL CARTRIDGE (3000 PSI NITROGEN)	MIL-C-81575	1670-00-178-0844 IF NITROGEN GAS CARTRIDGES ARE NOT AVAILABLE THROUGH THE SUPPLY SYSTEM, THEY CAN BE OBTAINED FROM THE MANUFACTURER (CAGE 97619)	
HAND-HELD CABLE CUTTER	1490 MTN	5110-00-224-7053	
BLANKETS, WOOL	MIL-B-844	7210-00-082-5668	
CRANIAL ASSEMBLIES		NAVAIR 13-1-6.7-3	
LPP-1/1A OR LPU-32/P PRESERVERS WITH LOCALLY MANUFACTURER EXTENSION BELT ASSEMBLY (LPU-32/P SHALL REPLACE THE LPP-1/A BY ATTRITION)	LPP-1A, P/N 68A94D2-1  LPU-32/P 3335AS101-1	4220-00-089-7620  4220-01-440-1573  NAVAIR 13-1-6-1-2 CH 23/25	
LPU-31/P LIFE PRESERVER ASSY IS AUTHORIZED FOR USE BY HELICOPTER AIRCREWMEN USING THE T-65 BODY ARMOR		NAVAIR 13-1-6-1-2 CH 22	
FRESHWATER CONTAINER			
ELECTRIC SEA MARKER LIGHT	1702AS100-1	6230-01-262-1812	
DATUM MARKER BUOY	MB-1BW-750053	MARTECH INC.	
SAR BUOY	AN/SSQ-83		
	NALC 8W24	5845-01-046-7820	
	NALC 8W31	5845-01-062-3598	
MK 58 FLARES		1370-00-752-8126	2 EA
MK 25 FLARES		1370-01-194-4143	4 EA
SAR MEDEVAC LITTER	402	6530-01-187-0104	
STOWAGE CASE, # 402	402-1	LIFESAVING SYSTEMS	
FRAME COVER, # 402	402-2	LIFESAVING SYSTEMS	
FRONT FLOTATION PAD, # 402	402-3	LIFESAVING SYSTEMS	
REAR FLOTATION PAD, # 402	402-4	LIFESAVING SYSTEMS	
CARRYING HARNESS, # 402	402-8	LIFESAVING SYSTEMS	
VERT HOISTING SLING, # 402	402- 7	LIFESAVING SYSTEMS	

**OVERWATER RESCUE EQUIPMENT (CONT)**

<b>NOMENCLATURE</b>	<b>PART NUMBER/ SIZE</b>	<b>NSN OR APPROVED SOURCE</b>	<b>QUANTITY</b>
RESCUE LITTER (STOKES)	P/N 9-1047	6530-01-315-4784	
FLOTATION ASSEMBLY	1823AS101	5961-01-329-6420 (PARTS CAN BE ORDERED AS INDIVIDUAL UNITS)	
a. FLOAT LOG FOAM	130		
b. FLOAT LOG COVERS	110		
c. RETAINER STRAPS (4 EACH)	150		
d. PATIENT RESTRAINT STRAPS (SET OF 5)	140		
e. CHEST PAD FOAM	103-3		
f. CHEST PAD COVER	103-4		
g. BALLAST BAR	170		
h. MEDEVAC LITTER STOWAGE	402-1		
RESCUE LITTER SLING ASSEMBLY (STOKES AND MEDEVAC)	190	1670-01-226-5300	
TRAIL LINE ASSEMBLY	220	4010-01-312-4854	
a. LINE PACK (BAG)	1554AS301-1	1680-01-226-5135	
b. LINE ROPE ASSEMBLY		1680-01-226-5136	
c. LINE SHOT BAG		1680-01-236-4663	
d. LINE V-STRAP		1680-01-242-1031	
e. LINE GLOVES	225 (S-XL)	LIFESAVING SYSTEMS	
HOISTING VEST	207	LIFESAVING SYSTEMS	
RESCUE NET	X872SF	1670-01-172-3592 REPLACEMENT PARTS PURCHASED FROM MANUFACTURER BILLY PUGH CO. INC	
NIGHT VISION GOGGLES (AN/PVS-5)	AN/PVS-7C	5855-01-363-7491	
NIGHT VISION GOGGLES (AN/AVS06)	AN/AVS-9	5855-01-473-2904	
RESCUE BASKET COLLAPSIBLE	495	LIFESAVING SYSTEM	

OVERLAND RESCUE EQUIPMENT

NOMENCLATURE	PART NUMBER/ SIZE	NSN OR APPROVED SOURCE	QUANTITY
SIGNALING SLEEVES (OPTIONAL EQUIPMENT)	465	LIFESAVING SYSTEMS	
CLIMBER'S SPIKES	A-A-1109	4240-00-273-9668	
CLIMBER'S WAIST BELT	A-A-1977 (42")	4240-00-926-4154	
CLIMBER'S POLE STRAP	P/N A-A-1776	4240-00-725-9715	
CARABINERS (NONLOCKING)		8465-01-322-7433	
CARABINERS (LOCKING) (STUBAI STEEL SG #85)		8465-01-322-7432	
CLIMBER'S HELMET	P/N 471157	NORTHWEST RIVER SUPPLIES	
HEADLAMP			
RESCUE "8" DESCENDER (WITH EARS) (BLACK)	300840	CMC RESCUE	
SPRING-LOADED BELAY PLATE	434507 ABC	LIBERTY MOUNTAIN SPORTS	
11MM DYNAMIC BELAY ROPE	438117-377-001	LIBERTY MOUNTAIN SPORTS	
SKY GENIE (NO SUBSTITUTE)	14G-0	SKY GENIE SYSTEMS DESCENT CONTROL, INC.	
a. ROPE (150 FEET)	E-4 150	SKY GENIE SYSTEMS DESCENT CONTROL, INC	
b. ROPE (250 FEET)	E-4 250	SKY GENIE SYSTEMS DESCENT CONTROL, INC	
c. RAPPEL ROPE BAG (150)		SKY GENIE SYSTEMS DESCENT CONTROL, INC	
d. RAPPEL ROPE BAG (250)		SKY GENIE SYSTEMS DESCENT CONTROL, INC	
TUBULAR NYLON STRAPS 1 INCH X 150 INCHES (CUT TO LENGTHS)		8305-00-753-6529	
ORANGE FLIGHT SUIT	FLS-27/P	GIBSON-BARNES	
RESCUE MOUNTAIN BOOT	MIL-B-43739	8430-00-458-9135 THRU 0260 NOTE: LAST FOUR DIGITS DEPEND ON SIZE NEEDED. SEE NAVAIR 00-35-Q H-2	
HOISTING VEST	207	LIFESAVING SYSTEMS	
V-BLADE RESCUE KNIFE	RN2	5110-00-524-6924	
REPLACEMENT BLADES	RKB-G	5110-00-098-4326	
HAND SAW	404-013	RECREATIONAL EQUIP	
SVEN FOLDING SAW	370830	LIBERTY ORGANIZATION	
REPLACEMENT BLADES	370831	LIBERTY ORGANIZATION	
SURVIVAL TOOL KIT, AIRMANS (PORTABLE SAW)		8465-00-376-6741	
FLASHLIGHT	MX-991/U	6230-00-264-8261	

**OVERLAND RESCUE EQUIPMENT (CONT.)**

NOMENCLATURE	PART NUMBER/ SIZE	NSN OR APPROVED SOURCE	QUANTITY
ENTRENCHING TOOL, SHOVEL	P/N A-A-59337	5120-00-878-5932	
PULLEY 2-INCH SINGLE	SM150000	PIGEON MOUNTAIN INDUSTRIES	
PULLEY 2-INCH DOUBLE	SM155000	PIGEON MOUNTAIN INDUSTRIES	
RESCUE SEAT	420	4240-01-465-2302	
SAR MEDEVAC LITTER	402	6530-01-187-0104	
RESCUE LITTER (STOKES)		6530-01-315-4784	
RESCUE LITTER SLING ASSEMBLY (STOKES AND MEDEVAC)	1554AS201-1	1670-01-226-5300	
TRAIL LINE ASSEMBLY (SEE OVERWATER RESCUE EQUIPMENT FOR BREAKDOWN OF IND. ITEMS)	220	4010-01-312-4854	
NIGHT VISION GOGGLES (AN/PVS-5)	AN/PVS-7C	5855-01-363-7491	
NIGHT VISION GOGGLES (AN/AVS-6)	AN/AVS-9	5855-01-473-2904	
106-CUBIC-INCH PORTABLE OXYGEN SYSTEM	0820130-3	1660-01-138-8623	
OXY CADDY	36019	IRON DUCK	
RAPPEL HARNESS (COMES IN FIVE SIZES)		CMC RESCUE	
a. S, 26 TO 30 IN WAIST, 18 to 26 IN LEG	202512	1680-01-453-9830	
b. M, 30 to 34 IN WAIST, 20 to 28 IN LEG	202513	1680-01-453-9806	
c. L, 34 to 38 IN WAIST, 22-30 IN LEG	202514	1680-01-453-9820	
d. XL, 38 to 42 IN WAIST, 22 to 30 IN LEG	202515	1680-01-453-9834	
e. XXL, 42 to 46 IN WAIST, 24 to 32 IN LEG	202516	1680-01-453-9839	

**REQUIRED DECK EQUIPMENT**

NOMENCLATURE	PART NUMBER/ SIZE	NSN OR APPROVED SOURCE	QUANTITY
HEAVING LINES, 100 FEET WITH ORANGE BALLS		LIFESAVING SYSTEMS	6 EA
GRAPNEL HOOK, 4 POUNDS		2040-00-287-9644	2 EA
LIFE RING, 24 INCH, WITH 100 FEET, 3/8 INCH PROPYLENE LINE		4220-00-275-3156	2 EA
BLANKET, WOOL	A-A-55188	7210-00-082-5668	2 EA
MEDICAL KIT, LEVEL "A"		6545-01-180-3552	1 EA
RESCUE LITTER (STOKES)		6530-01-315-4784	1 EA
a. LITTER NETTING		6530-01-315-4785	1 EA

**REQUIRED DECK EQUIPMENT (CONT.)**

NOMENCLATURE	PART NUMBER/ SIZE	NSN OR APPROVED SOURCE	QUANTITY
b. FLOTATION ASSEMBLY	182312101	4220-01-329-6420	1 EA
1. LOG FOAM	130	1-9 MAY BE ORDERED SEPARATELY FROM LIFESAVING SYSTEMS USING PART NUMBERS.	2 EA
2. LOG COVERS	110		2 EA
3. RETAINER STRAPS	150		4 EA
4. RESTRAINT STRAPS (COLOR-CODED)	402-10		5 EA
5. CHEST PADS FOAM	103-3		1 EA
6. CHEST PAD COVERS	103-2		1 EA
7. BALLAST BAR	170		1 EA
8. STOWAGE BAG (OPTIONAL)	409		1 EA
c. RESCUE LITTER SLING ASSEMBLY	190	1670-01-226-5300	1 EA
TRAIL LINE ASSEMBLY	220	4010-01-312-4854	1 EA
a. LINE PACK BAG	221	1680-01-226-5135	1 EA
b. LINE ROPE ASSEMBLY	222	1680-01-226-5136	1 EA
c. LINE SHOT BAG	224	168001-236-4663	1 EA
d. LINE V-STRAP	223	1680-01-242-1031	1 EA
e. LINE GLOVES	225-XL	LIFESAVING SYSTEMS	1 EA
MEGAPHONE	AN/PIQ-5B	5830-01-412-2012	1 EA
V-BLADE RESCUE KNIFE		5110-00-524-6924	1 EA
REPLACEMENT BLADES		5110-00-098-4326	AS REQ
LONG RIFLE		GUNNERS MATE	1 EA
SNAP HOOK, 2-3/8 INCH, STAINLESS	364	LIFESAVING SYSTEMS	2 EA
AUTO-INFLATABLE OR INHERENTLY BUOYANT LIFE JACKET	LPP-1A, P/N 68A94D2-1	4220-00-089-7620	1 EA
SAFETY HARNESS		4240-00-022-2522	1 EA
DYNABRAKE		4240-01-152-1525	1 EA
SWIMMER TENDING LINE, 300 YARDS (PLASTIC POLYPROPYLENE)	MIL-R-24049 TYPE 1	4020-00-968-1351	2 EA
RESCUE ROPE REEL	265	LIFESAVING SYSTEMS	1 EA
SNAP HOOK, 4 INCH, STAINLESS	366	LIFESAVING SYSTEMS	2 EA

**J-BAR DAVIT EQUIPMENT**

NOMENCLATURE	PART NUMBER/ SIZE	NSN OR APPROVED SOURCE	QUANTITY
J-BAR DAVIT		IAW SHIP'S DESIGNS	2 EA
SNATCH BLOCK, MIN 8 INCH		3940-00-072-0331	2 EA
SHACKLE, SAFETY ANCHOR, WITH COTTER KEYS		IAW SHIP'S DESIGNS	8 EA
DOWEL MIN 1 x 5-INCH HARDWOOD		5510-00-223-0953	2 EA

**J-BAR DAVIT EQUIPMENT (CONT.)**

NOMENCLATURE	PART NUMBER/ SIZE	NSN OR APPROVED SOURCE	QUANTITY
HOIST LINE, 3-INCH NYLON		SHIP MANUFACTURED	2 EA
VANG GUY LINE, 2-INCH NYLON		SHIP MANUFACTURED	4 EA
DOUBLE RESCUE HOOK	MS18027-2A	4030-00-863-8546	2 EA
SLING, RESCUE STROP		1680-01-347-4946	2 EA
CHEMICAL LIGHT STRAPS		4220-01-325-3133	4 EA

**RESCUE BOAT EQUIPMENT**

NOMENCLATURE	PART NUMBER/ SIZE	NSN OR APPROVED SOURCE	QUANTITY
BOAT HOOK, MIN 6 FEET		2040-00-268-9251	1 EA
24-INCH LIFE RING (MWB)		4220-00-275-3156	1 EA
20-INCH LIFE RING (RHIB)		4220-00-275-3155	1 EA
BATTLE LANTERNS		6230-00-783-6519	2 EA
MEDICAL KIT, LEVEL A		6545-01-180-3552	1 EA
9MM PISTOL OR LONG RIFLE		GUNNERS MATE	1 EA
SAR MEDEVAC LITTER	402	6530-01-187-0104	1 EA
SWIMMER TENDING LINE, 300 YARDS (PLASTIC POLYPROPYLENE)	MIL-R-24049 TYPE 1	4020-00-968-1351	1 EA
RESCUE ROPE REEL	265	LIFESAVING SYSTEMS	1 EA
STAINLESS STEEL SNAP HOOK, 2-3/8 INCH	364	LIFESAVING SYSTEMS CORP	1 EA
RADIO SET, BRIDGE TO BRIDGE		VHF	1 EA
RADIO SET, PORTABLE		VHF OR UHF	1 EA
FLASHLIGHTS		6230-00-299-3035	2 EA
V-BLADED RESCUE KNIFE		5110-00-524-6924	1 EA
HEAVING LINES, 100 FEET WITH ORANGE BALLS		LIFESAVING SYSTEMS CORP	2 EA
GRAPNEL HOOK, 4 LBS.		2040-00-287-9644	2 EA

**LEVEL "A" SAR MEDICAL KIT**

<b>NOMENCLATURE</b>	<b>QUANTITY</b>	<b>NSN OR SUGGESTED SOURCE</b>
MEDICAL KIT, BAG AND PANEL	1 EACH	6545-01-157-9112
ADHESIVE TAPE, SURGICAL	1 ROLL	6510-00-203-5000
ASHERMANS CHEST SEAL	4 EACH	6510-01-408-1920
BANDAGE, ADHESIVE	2 PKG	6510-00-913-7909
BANDAGE, GAUZE, ELASTIC (4.5 IN X 5 YARDS)	3 EACH	6510-00-935-5821
BANDAGE, KERLIX (3 IN X 5 YARDS)	3 EACH	6510-00-058-7993
BANDAGE, MUSLIN	4 EACH	6510-00-201-1755
BLANKET, CASUALTY	1 EACH	7210-00-935-6665
COMPRESS AND SKULL CAP, HEAD DRESSING	2 EACH	6510-00-201-7680
EMERGENCY TRAUMA DRESSING (ETD), ABDOMINAL	1 EACH	6510-01-541-8121
EMERGENCY TRAUMA DRESSING (ETD) (4 IN)	4 EACH	6510-01-558-4108
FIRST AID KIT, EYE DRESSING	1 EACH	6545-00-853-6309
MASK, OXYGEN, POCKET	1 EACH	6515-01-341-9329
MINI MAG LIGHT	1 EACH	6230-01-259-4495
NRP PERSONAL PROTECTIVE EQUIPMENT (PPE) KIT	4 EACH	6515-01-537-1534
SHEET, BURN-TRAUMA DRESSING	1 EACH	6510-01-194-0252
SODIUM CHLORIDE, INJECTION 0.9%, USP	2 EACH	6505-01-330-6269
SPLINT, UNIVERSAL (SAM)	2 EACH	6515-01-494-1951
SUPPORT, CERVICAL (ADJUSTABLE)	2 EACH	6515-01-452-4435
TOURNIQUET, COMBAT APPLICATION (CAT)	2 EACH	6515-01-521-7976
TRAUMA SHEARS (7 ¼ IN)	1 EACH	6515-01-538-9276

**LEVEL "B" SAR MEDICAL KIT**

<b>LEVEL B MEDICAL BAG-NOMENCLATURE</b>	<b>QUANTITY PER KIT</b>	<b>NSN OR SUGGESTED SOURCE</b>
S.T.O.M.P. 2 MED PACK	1 EACH	6546-01-522-1031
ADHESIVE TAPE, SURGICAL	1 EACH	6510-00-283-5000
AIRWAY SET, NASOPHARYNGEAL	1 EACH	BOUNDTREE ITEM # 028055
AIRWAY SET, ORAL	1 EACH	BOUNDTREE ITEM # 021008
ASHERMANS CHEST SEAL	4 EACH	6510-01-408-1920
BANDAGE, KERLIX (3 IN X 5 YARDS)	2 EACH	6510-00-058-7993
BANDAGE, GAUZE, ELASTIC (4.5 IN X 5 YARDS)	2 EACH	6510-00-935-5821
BANDAGE, MUSLIN	4 EACH	6510-00-201-1755
BLANKET, CASUALTY	2 EACH	7210-00-935-6665
BOA CONSTRICTING BAND	2 EACH	6515-01-537-2611
EMERGENCY TRAUMA DRESSING (ETD), ABDOMINAL/STUMP	2 EACH	6510-01-541-8121
EMERGENCY TRAUMA DRESSING (ETD) (4 IN)	4 EACH	6510-01-558-4108
ENDOTRACHEAL TUBE (7.5MM I.D.)	2 EACH	6515-01-036-9034
ENDOTRACHEAL TUBE HOLDER, THOMAS	2 EACH	6515-01-501-3063
EPI-PEN, ADULT	2 EACH	6505-01-152-7626
FAST 1 INTEROSSEOUS INFUSION SITE	2 EACH	6515-01-530-6147
FIRST AID KIT, EYE DRESSING	1 EACH	6545-00-853-6309
FORCEPS, ENDOTRACHEAL TUBE	1 EACH	6515-00-332-3300
INFUSER, PRESSURE, I.V., DISPOSABLE	2 EACH	6515-01-280-8163
INTRAVENOUS STARTER KIT (16 GAUGE)	2 EACH	6515-01-336-5874
INTRAVENOUS STARTER KIT (18 GAUGE)	2 EACH	6515-01-337-3681
LARYNGOSCOPE SET	1 EACH	6515-01-450-9790
LUBRICANT, SURGICAL	2 EACH	6505-00-111-7829
MASK, OXYGEN, POCKET	1 EACH	6515-01-341-9329
MASS CASUALTY INCIDENT (MCI) TAGS	25 EACH	8465-01-388-2461
MINI MAG LIGHT	1 EACH	6230-01-259-4495
NEEDLE DECOMPRESSION KIT, ARS (3.25 IN)	2 EACH	6515-01-541-0635
NONIN ONYX FINGER PULSE OXIMETER	1 EACH	6515-01-466-0971
PROTECTION KIT, BIOLOGICAL HAZARDS, SUPER	2 EACH	6515-01-387-8973
RINGER'S LACTATE, INJECTION, USP (1000 ML)	2 EACH	6505-01-462-3025
SALINE LOCK KIT	4 EACH	6515-01-537-4094
SHEET, BURN-TRAUMA DRESSING	1 EACH	6510-01-194-0252
SODIUM CHLORIDE, INJECTION 0.9%, USP	2 EACH	6505-01-330-6269
SPHYGMOMANOMETER	1 EACH	6515-01-530-5160
SPLINT, TRACTION, SAGER	1 EACH	6515-01-450-3709
SPLINT, UNIVERSAL (SAM)	2 EACH	6515-01-494-1951
SPONGE, SURGICAL (4 x 4)	6 EACH	6510-00-721-9808
STETHOSCOPE, COMBINATION LITTMAN	1 EACH	6515-01-314-6694
STYLET, CATHETER, REGULAR	1 EACH	6515-01-225-4761
SUCTION UNIT, V-VAC HANDHELD	1 EACH	6515-01-364-1047
SUPPORT, CERVICAL, PEDIATRIC (ADJUSTABLE)	1 EACH	6515-01-473-1966
SUPPORT, CERVICAL (ADJUSTABLE)	3 EACH	6515-01-452-4435
SURGICAL CRICOTHYROIDOTOMY KIT	1 EACH	6515-01-540-7568
SURGICAL INSTRUMENT SET, MINOR SURGERY	1 EACH	6545-00-957-7650
SYRINGE, STERILE (10 CC)	1 EACH	6515-01-372-6688
TAPE, SURGICAL POROUS (1 IN)	3 EACH	6515-00-890-1372
TOURNIQUET, CAMBAT APPLICATION (CAT)	2 EACH	6515-01-521-7976
TRAUMA SHEARS ( 7 ¼ IN)	1 EACH	6515-01-538-9276
VENOSET, PRIMARY WITH CLAMP, MACRO	4 EACH	6515-01-105-0614

SAR MEDICAL OXYGEN SYSTEM AND PATIENT MONITORING EQUIPMENT-NOMENCLATURE	QUANTITY PER KIT	NSN OR SUGGESTED SOURCE
CASE, CYLINDER, RESUS, PELICAN, BLACK, #1650	1 EACH	6760-01-491-2821
CYLINDER, COMPRESSED GAS, D	2 EACH	6505-00-132-5181
KNOB, OXYGEN BOTTLE	2 EACH	BOUNDTREE ITEM # 020550
MASK, ORONASAL, NON-REBREATHING	2 EACH	6515-01-164-3755
NASAL CANNULA, DISPOSABLE	2 EACH	6515-01-480-2308
REGULATOR, OXYGEN PRESSURE WITH INTEGRAL FLOW	2 EACH	6680-01-234-6789
RESUSCITATOR, HAND POWERED (BVM)	1 EACH	BOUNDTREE ITEM# 537100
RESUSCITATOR, VOLUME VENTILATOR (AUTO VENT 3000)	1 EACH	LIFE SUPPORT PRODUCTS INC.
SUCTION UNIT, QUICK DRAW, BAT POWERED	1 EACH	BOUNDTREE ITEM #590500
SUCTION UNIT, AC/DC CHARGING CONVERTER	1 EACH	BOUNDTREE ITEM # 5980521100
MONITOR, PATIENT VITAL SIGNS	1 EACH	6515-01-432-2707

AUTHORIZED OPTIONAL MEDICAL EQUIPMENT- NOMENCLATURE	QUANTITY PER KIT	NSN OR SUGGESTED SOURCE
COMBI-TUBE, EMERGENCY AIRWAY	1 EACH	BOUNDTREE ITEM# 0218441
LITTER-SPLINT, EXTRICATION	1 EACH	6530-01-193-5037
MILITARY ANTI-SHOCK TROUSERS (MAST)	1 SET	6515-01-076-4793
SPLINT ASSEMBLY, (KED)	1 EACH	6515-01-465-6662
OXY CADDY	1 EACH	6515-01-373-4320

**NOTES:**

- 1. A COMPLETE LEVEL B SAR MEDICAL KIT IS COMPRISED OF THE LEVEL B MEDICAL BAG, SAR MEDICAL OXYGEN SYSTEM AND PATIENT MONITORING EQUIPMENT AND ANY AUTHORIZED OPTIONAL MEDICAL EQUIPMENT.**
- 2. STATION SAR COMMANDS SHALL HAVE 1 COMPLETE LEVEL B SAR MEDICAL KIT PER SAR CAPABLE AIRCRAFT.**
- 3. OPERATIONAL SQUADRONS SHALL HAVE 1 COMPLETE LEVEL B MEDICAL KIT PER SAR MEDICAL TECHNICIAN ASSIGNED, PLUS 1 SPARE KIT PER SQUADRON.**
- 4. AUTHORIZED OPTIONAL MEDICAL EQUIPMENT MAY BE UTILIZED IN ADDITION TO THE REQUIRED CONTENTS LISTED ABOVE.**
- 5. OXY CADDY IS INTENDED TO BE USED IN LIEU OF PELICAN CASE #1650 TO CARRY OXYGEN IN SMALLER AIRFRAMES (H-1, H-60B/F). FOR OTHER AIRFRAMES, IT MAY BE ORDERED IN ADDITION TO THE PELICAN CASE TO ALLOW FOR THE TRANSPORTATION/ADMINISTRATION OF OXYGEN TO AND FROM THE AIRCRAFT.**

## REFERENCES

- International Aeronautical and Maritime Search and Rescue Manual (IAMSAR Manual). The primary purpose of the three volumes of the IAMSAR Manual is to assist states in meeting their own search and rescue (SAR) needs. These volumes provide guidelines for a common aviation and maritime approach to organizing and providing SAR services. Each volume of the IAMSAR Manual is written with specific SAR system duties in mind, and can be used as a stand alone document or, in conjunction with the other two manuals, as a means to attain a full view of the SAR system.
- Joint Pub 3-50-2, Doctrine for Joint Combat Search and Rescue (CSAR). Provides military guidance for the exercise of responsibilities and authority by commanders of unified and specific commands and other joint forces commanders and prescribes doctrine for planning and conduct of Joint Combat Search and Rescue Operations.
- Joint Pub 0-2, Unified Action Armed Forces (UNAAF), Chapter IV, Section 3, Search and Rescue Operations. Sets forth basic principles governing service participation in a joint rescue coordination center (JRCC), the conduct of joint SAR missions, and responsibilities and authority of commanders of unified and specified commands.
- ICAO Document 7333-AN/859, Search and Rescue Manual. Provides information and guidance for International Civil Aviation Organization (ICAO) members regarding SAR organization and procedures.
- ATP 3.3.9.2, Search and Rescue. Prescribes standardized SAR operational procedures within NATO to ensure coordination between the SAR facilities of forces operated by NATO member nations.
- ACP 135, Communications Instructions, Distress and Rescue Procedures. Contains communications instructions and frequencies for search and rescue operations for use by U.S. and Allied forces.
- Helicopter Operating Procedures for Air-Capable Ships NATOPS, CV NATOPS, LPH/LHA/MCS NATOPS. Describes the mandatory operational procedures, training, and SAR requirements for the shipboard employment of helicopters.
- NWP 3-22.5-SAR-TAC, Navy Search and Rescue Information Document (SAR TACAID). Provides tactical SAR information for aircrews and units. Includes SAR planning, communications, search patterns, briefing guides, etc.
- NAVOCEANCOMINST 3140.F, Appendix XIII. Prescribes procedures for obtaining a computer solution for datum minimax, datum, probable error of position, and search radius for open-ocean searches.
- OPNAVINST 3120.32 Series. Standard Organization Regulations Manual of the U.S. Navy.
- U.S. Navy Aircrew Firefighting and Rescue Manual — NA 00-80R-14
- U.S. Navy Aircraft Emergency Rescue Information Manual NA 00-80R-14-1
- NAVMED Manual — NAVMED/P-117
- U.S. Air Force Aircraft Emergency Rescue Information — T0-00-105E-9
- Inflatable Survival Equipment — NA 13-1-6.1

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Parachutes — NA 13-1-6.2

Aircrew System Seat Survival Kits — NA 13-1-6.3

Oxygen Equipment — NA 13-1-6.4

Rescue and Survival Equipment — NA 13-1-6.5

Aircrew Personnel Equipment — NA 13-1-6.7

NAVSEATECH Manual — Life Preservers — NAVSEA 090-1LP0770000

UH-1N (NA 01-110HCE-1)

SH-2G (NA 01-260HCG-1)

SH-3D/H (NA 01-230HLH-1)

SH-3A/G (NA 01-230HLC-1)

H-46A/D (NA 01-250HDB-1)

SH-60B (NA A1-H60BB-NFM-000)

SH-60F (NA A1-H60FB-NFM-000)

HH-60H (NA A1-H60HA-NFM-000)

NATOPS Flight Manuals (MH-60S NA AI-H-60SA-NFM-000)

## LIST OF ABBREVIATIONS AND ACRONYMS

<b>ABCs</b>	airway, breathing, and/or circulation
<b>AED</b>	automated external defibrillator
<b>AGL</b>	above ground level
<b>AIRSAVE</b>	survival vest
<b>AISAP</b>	airsave integration survival vest armor protection ensemble
<b>AMAL</b>	authorized medical allowance list
<b>AMVER</b>	automated mutual-assistance vessel rescue system
<b>ARG</b>	amphibious ready group
<b>ARSD</b>	aviation rescue swimmer's dry suit
<b>ATC</b>	air traffic control
<b>BSI</b>	body substance isolation
<b>BVM</b>	bag valve mask
<b>CC</b>	crew chief (helicopter)
<b>CIC</b>	Command Information Center
<b>CME</b>	continuing medical education
<b>CO<sub>2</sub></b>	carbon dioxide
<b>COD</b>	carrier onboard delivery
<b>COTS</b>	commercial off-the-shelf
<b>CPR</b>	cardiopulmonary resuscitation
<b>CV</b>	aircraft carrier
<b>CVBG</b>	carrier battle group
<b>DD</b>	direct deployment
<b>DDS</b>	direct deployment system
<b>DF</b>	direction finder

## **NTTP 3-50.1**

<b>DIFCREW</b>	duty involving flying as a crew member
<b>DMB</b>	datum marker buoy
<b>DRH</b>	double rescue hook
<b>EMCON</b>	emission control
<b>EMT-B</b>	emergency medical technician level B
<b>ETA</b>	estimated time of arrival
<b>F/A</b>	fighter/attack
<b>FACSFAC</b>	fleet area control and surveillance facility
<b>FLIP</b>	flight information publication
<b>FLIR</b>	forward looking infrared
<b>FWNES</b>	fixed-wing, nonejection seat
<b>HABD</b>	helicopter aircrew breathing device
<b>HABDH</b>	helicopter aircrew breathing device holster
<b>HAC</b>	helicopter aircraft commander
<b>HAZMAT</b>	hazardous material
<b>HAZREP</b>	hazard report
<b>HBV</b>	Hepatitis “B” vaccine
<b>HELO</b>	helicopter
<b>HIRA</b>	helicopter inland rescue aircrewman
<b>IAMSAR</b>	International Aeronautical and Maritime Search and Rescue Manual
<b>IAW</b>	in accordance with
<b>ICAO</b>	International Civil Aviation Organization
<b>ICS</b>	intercommunications system
<b>IMC</b>	instrument meteorological conditions
<b>JRCC</b>	Joint Rescue Coordination Center
<b>LAT/LONG</b>	latitude/longitude
<b>LCPL</b>	landing craft personnel light
<b>LP</b>	low profile

<b>LSE</b>	landing signal enlisted
<b>MEDEVAC</b>	medical evacuation
<b>MOI</b>	mechanism of injury
<b>MPLR</b>	multiplace life raft
<b>MRC</b>	maintenance requirement cards
<b>MTF</b>	medical treatment facility
<b>MWB</b>	motor whaleboat
<b>N<sub>2</sub></b>	nitrogen
<b>NAMDRP</b>	Naval Aviation Maintenance Discrepancy Reporting Program
<b>NAR</b>	Notice of Ammunition Reclassification
<b>NATOPS</b>	Naval Air Training and Operating Procedures Standardization
<b>NESCB</b>	nonejection seat carrier-based
<b>NESLB</b>	nonejection seat land-based
<b>NSRS</b>	National Search and Rescue Supplement
<b>NVG</b>	night vision goggles
<b>O<sub>2</sub></b>	oxygen
<b>OA</b>	operating authority
<b>OSC</b>	on-scene commander
<b>OTC</b>	officer in tactical command
<b>PAC</b>	pilot at controls
<b>PAEC</b>	passenger antiexposure coverall
<b>PAESS</b>	passenger antiexposure survival system
<b>PAO</b>	public affairs officer
<b>PHSRU</b>	parachute harness sensing release unit
<b>PMS</b>	planned maintenance system
<b>PNAC</b>	pilot not at controls
<b>PPE</b>	personal protective equipment
<b>PTT</b>	push-to-talk

## **NTTP 3-50.1**

<b>QS</b>	quick strop
<b>RA</b>	rescue aircrewman
<b>RCC</b>	rescue coordination center
<b>RHIB</b>	rigid hull inflatable boat
<b>RS</b>	rescue swimmer
<b>RSSK</b>	rigid seat survival kit
<b>SAR</b>	search and rescue
<b>SARVIP</b>	survival armor recovery vest, insert, and packets
<b>SCU</b>	swimmer control unit
<b>SEAWARS</b>	Sea Water Activated Release System
<b>SC</b>	sensors and controls
<b>SHBD</b>	SAR helicopter breathing device
<b>SITREP</b>	situation report
<b>SMC</b>	SAR mission coordinator
<b>SMT</b>	search and rescue (SAR) medical technician
<b>SRU</b>	SAR recovery unit
<b>TACAID</b>	tactical airborne information document
<b>T/M/S</b>	type/model/series
<b>TSH</b>	TRI-SAR harness
<b>URT</b>	universal radio/transceiver
<b>USAF</b>	United States Air Force
<b>USCG</b>	United States Coast Guard
<b>USN</b>	United States Navy
<b>VMC</b>	visual meteorological conditions
<b>VOD</b>	vertical onboard delivery

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